Customer Care Solutions
RH-18/36/38 Series Transceivers

Troubleshooting Instructions

Issue 1 10/03
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Baseband troubleshooting

Baseband test points

This document contains the Nokia 1100 troubleshooting diagrams.

Test points are described and listed in the A3 schematic diagrams.

Troubleshooting diagrams

In this section, Troubleshooting diagrams is provided for the most common problems of the Nokia 1100

NOTE : Since both D200 (UEM) and D400(UPP) are underfilled, they can not be replaced. If either D200 or D400 is defective, the whole PWB has be discarded.

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Phone is dead

This means that the phone do not draw any current at all when supply is connected and/ or powerkey is pressed.

It is assumed that the voltage supplied is 3.6 VDC. The UEM will prevent any functionality what so ever at battery/supply levels below 2.9 VDC.

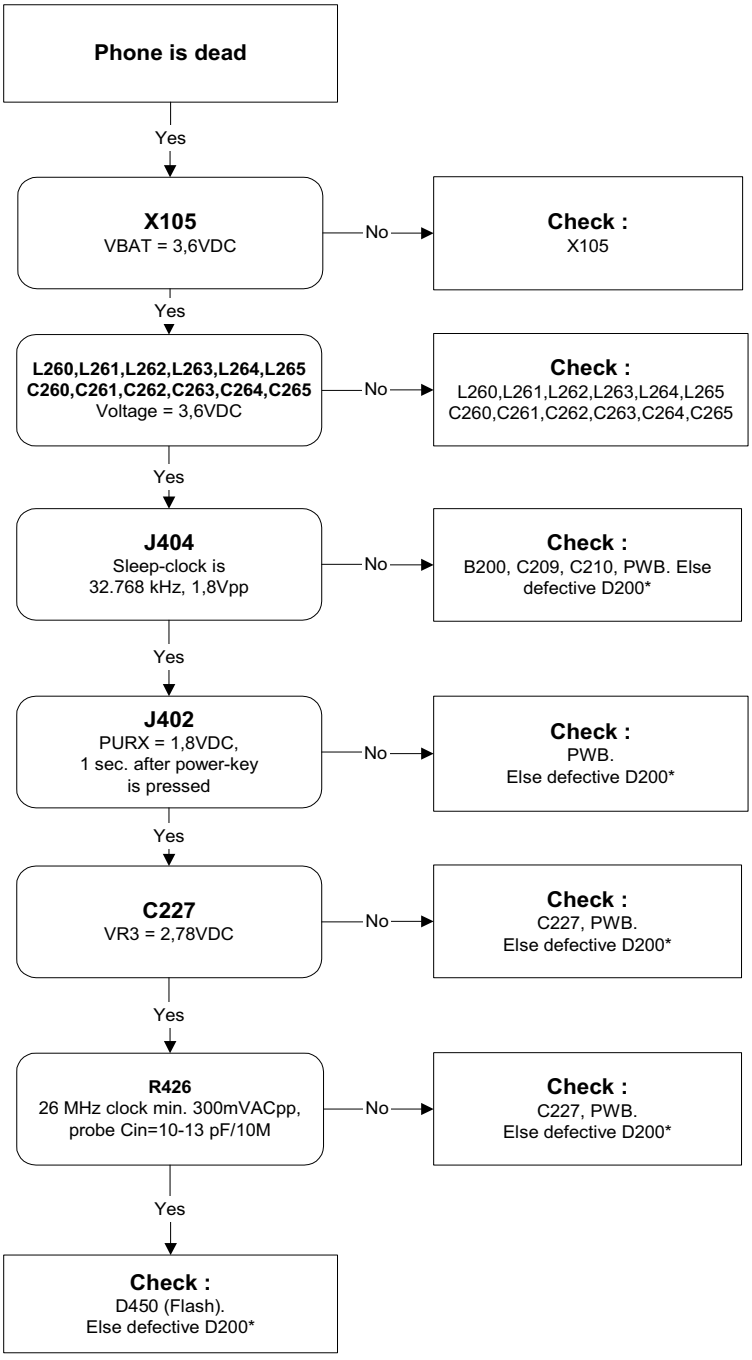

Figure 1: Phone is dead troubleshooting

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Flash programming do not work

The flash programming can only be done via the pads on the PWB (J396).

In case of Flash failure in FLALI station, problem is most likely related to SMD problems. Possible failures could be short-circuit of balls under µBGAs (UEM, UPP, FLASH). Missing or misaligned components.

In flash programming error cases the flash prommer can give some information about a fault.
The fault information messages could be:
- Phone doesn't set FBUS_TX line low

Because of the use of uBGA components it is not possible to verify if there is a short circuit in control- and address lines of MCU (UPP) and memory (flash).

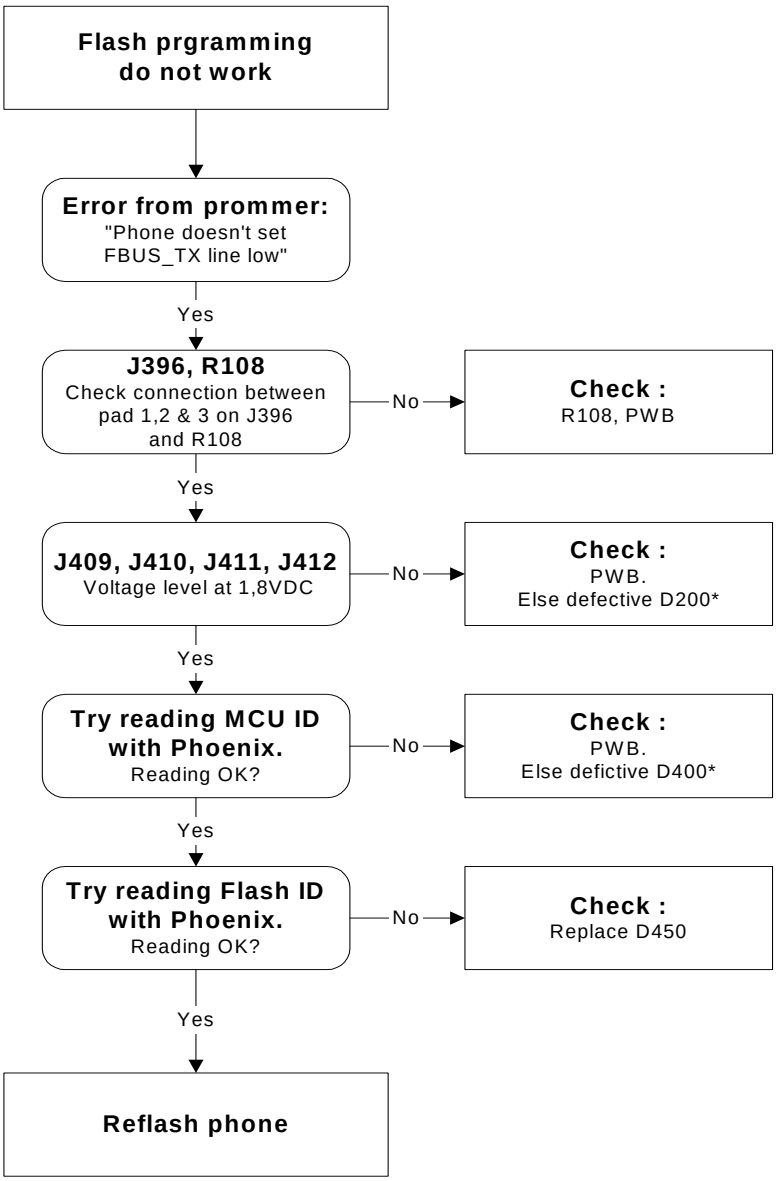
Flash prgramming do not work
Error from prommer: "Phone doesn't set FBUS_TX line low"
Yes
J396, R108 Check connection between pad 1,2 & 3 on J396 and R108
No
Check : R108, PWB
Yes
J409, J410, J411, J412 Voltage level at 1,8VDC
No
Check : PWB. Else defective D200*
Yes
Try reading MCU ID with Phoenix. Reading OK?
No
Check : PWB. Else defictive D400*
Yes
Try reading Flash ID with Phoenix. Reading OK?
No
Check : Replace D450
Yes
Reflash phone

Figure 2: Flash programming fault

Power does not stay on or phone is jammed

If this kind of failure is presenting itself immediately after FLALI, it is most likely caused by ASICs missing contact with PWB.

If for some reason the MCU does not service the watchdog register within the UEM, the operations watchdog will run out after approximately 32 seconds. Unfortunately, the service routine can not be measured.

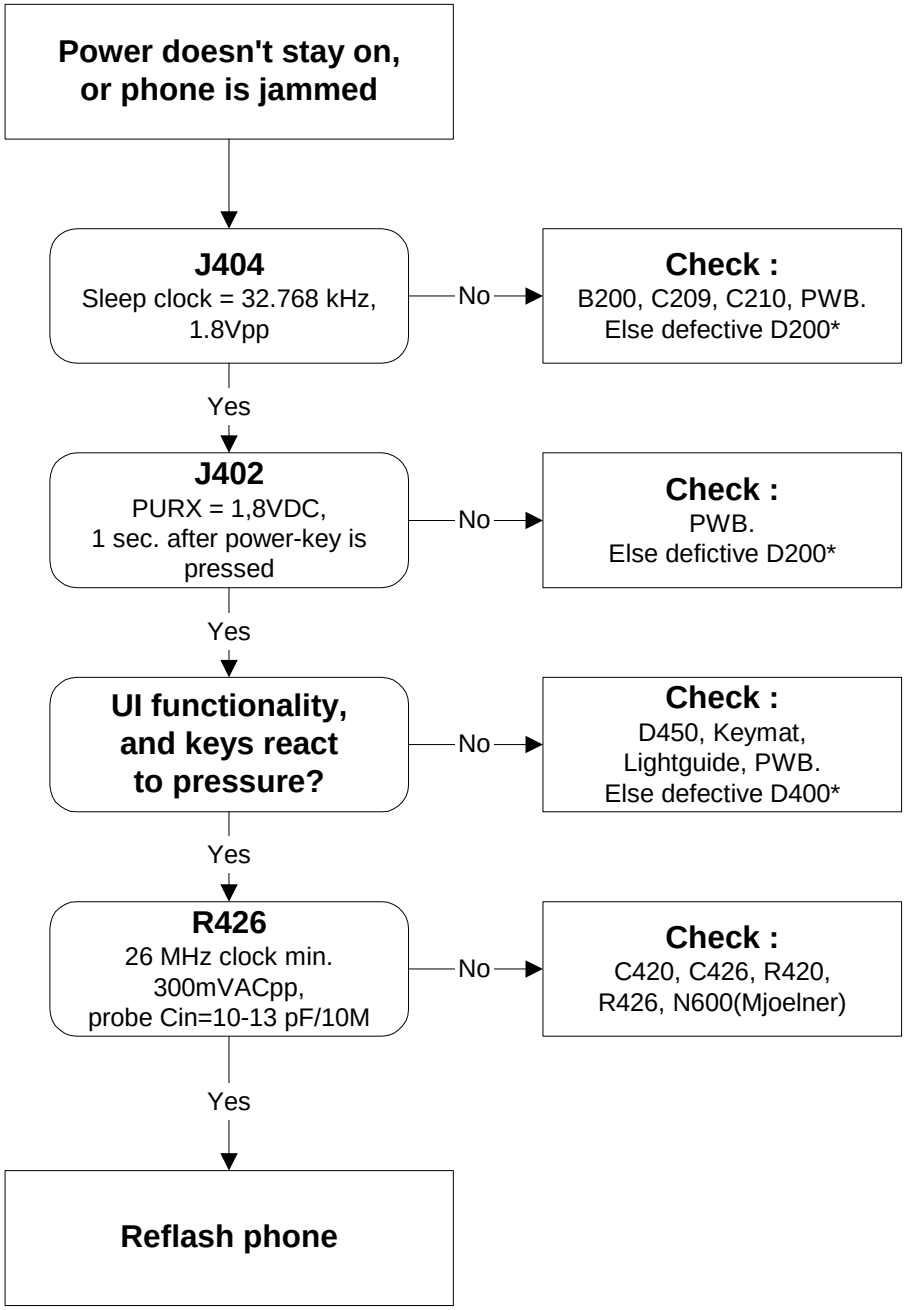

Figure 3: Phone jammed troubleshooting

Display information : "Contact Service"

This error can only happen at power up where several self-tests is run. If any of these test cases fails the display will show the message: "Contact Service".

It's individual test cases so the below lineup of error hunting's has no chronological order. Use common sense and experience to decide which test case to start error hunting at.

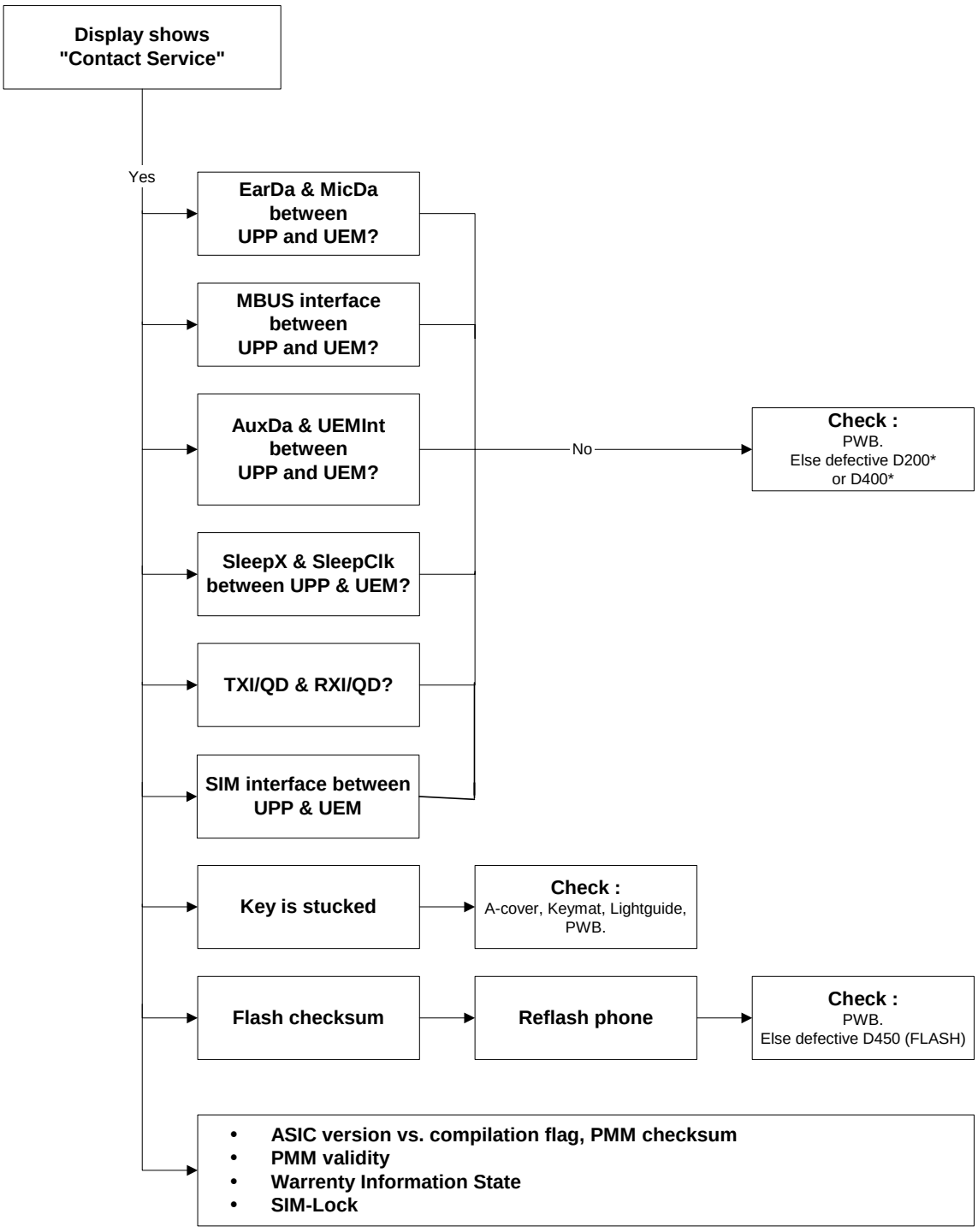
Display shows "Contact Service"
Yes
EarDa & MicDa between UPP and UEM?
MBUS interface between UPP and UEM?
AuxDa & UEMInt between UPP and UEM?
No
Check : PWB. Else defective D200* or D400*
SleepX & SleepClk between UPP & UEM?
TXI/QD & RXI/QD?
SIM interface between UPP & UEM
Key is stucked
Check : A-cover, Keymat, Lightguide, PWB.
Flash checksum
Reflash phone
Check : PWB. Else defective D450 (FLASH)
• ASIC version vs. compilation flag, PMM checksum
• PMM validity
• Warrenty Information State
• SIM-Lock

Figure 4: Troubleshooting when Contact Service message seen

The phone do not register to the network, or the phone cannot make a call

If the phone doesn't register to the network, the fault can be in either BB or RF. Only few signals can be tested since several signals is 'burried' in one or more of the inner layers of the PWB.

First of all check that SIM LOCK is not causing the error by using a Test-SIM card and connect the phone to a tester.

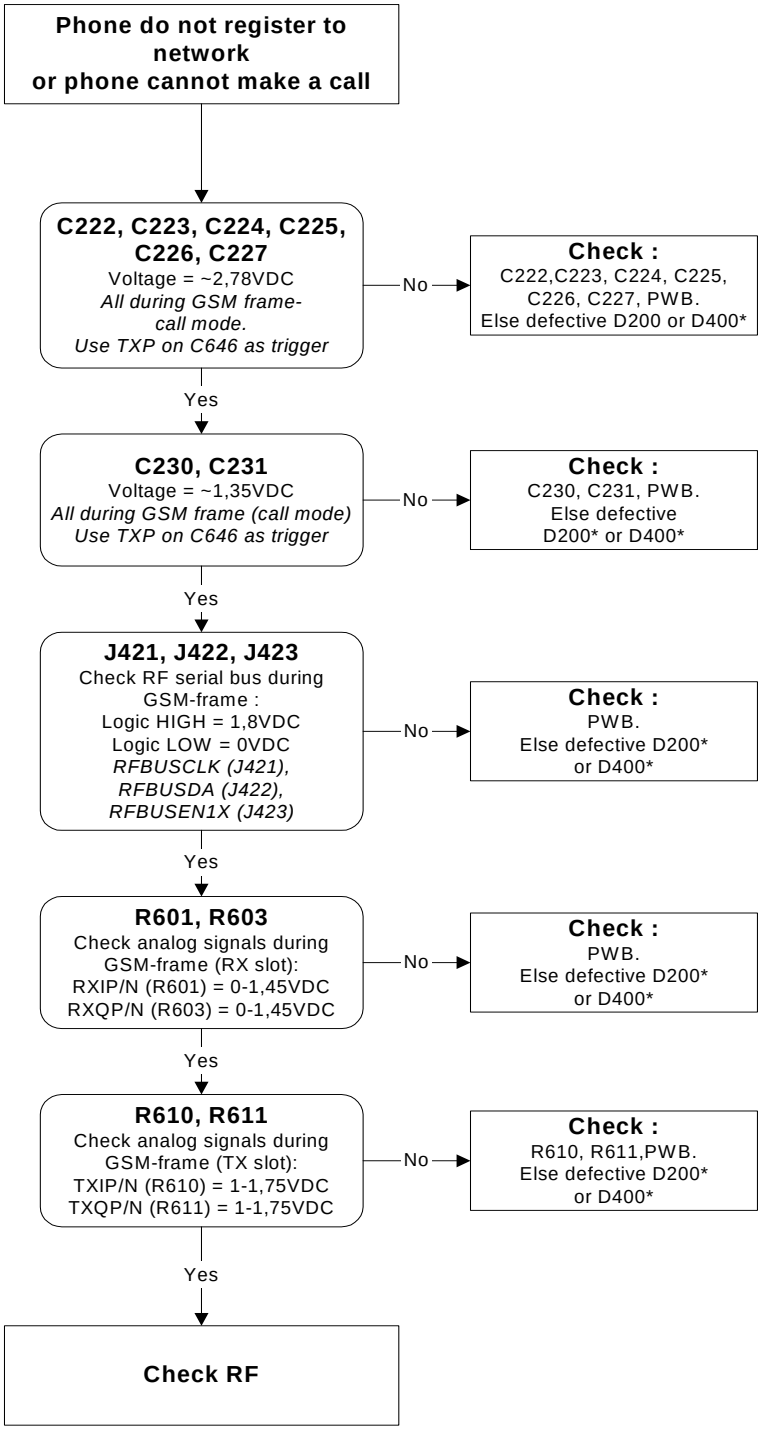

Figure 5: No call troubleshooting

SIM related faults

Insert SIM card fault

The hardware of the SIM interface from UEM (D200) to the SIM connector (X387) can be tested without a SIM card. When the power is switched on the phone first check for a 1,8V SIM card and then a 3V SIM card. The phone will try this four times, whereafter it will display ”Insert SIM card”.

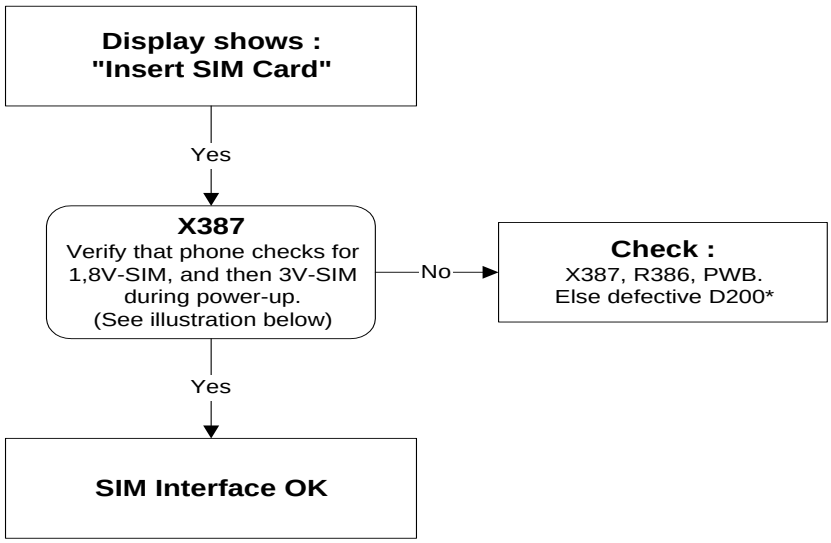

Figure 6: SIM troubleshooting

Check for SIM voltage during power-up	
Ch1 : VSIM Ch2 : RESET	Ch3 : CLOCK Ch4 : DATA

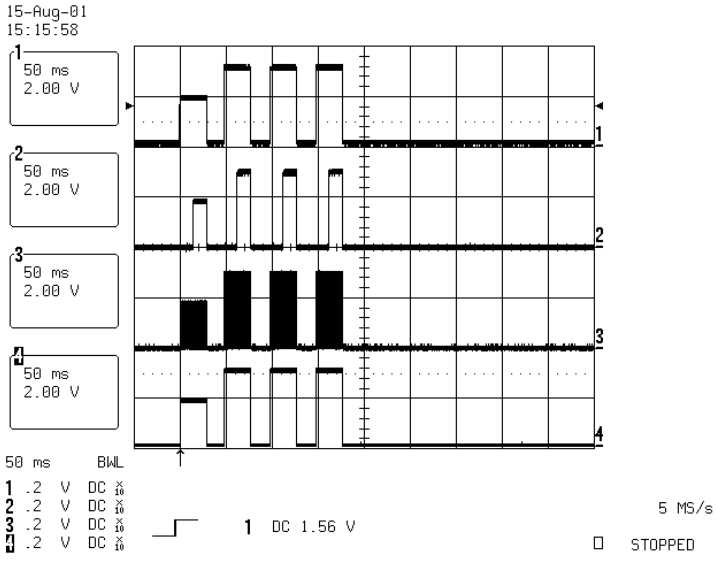

Figure 7: Signal diagram

SIM-Card rejected

The error "SIM card rejected" means that the ATR message received from SIM card is corrupted, e.g. data signal levels are wrong. The first data is always ATR and it is sent from card to phone.

For reference a picture with normal SIM power-up is shown below.

Normal SIM power-up sequence	
Ch1 : VSIM Ch2 : RESET	Ch3 : CLOCK Ch4 : DATA

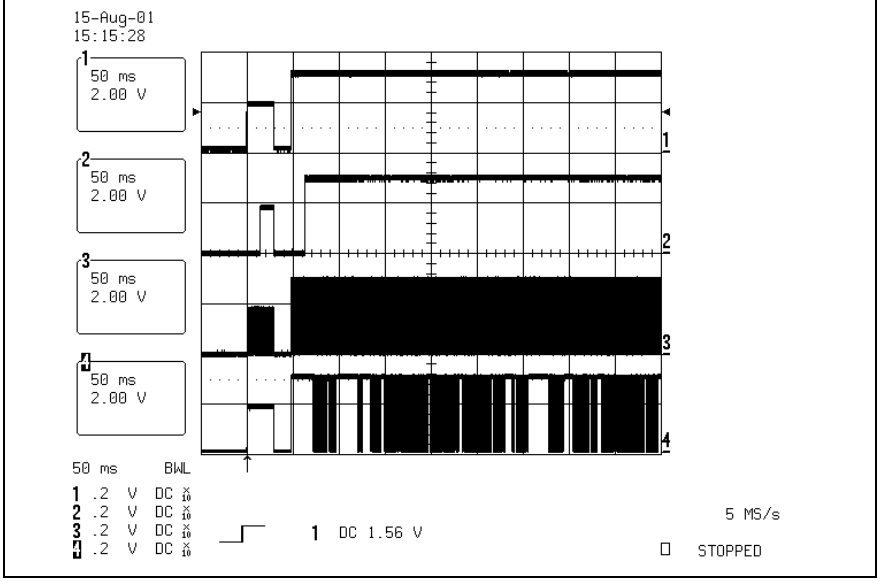

Figure 8: Signal diagram

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Audio related faults 1: Earpiece and microphone

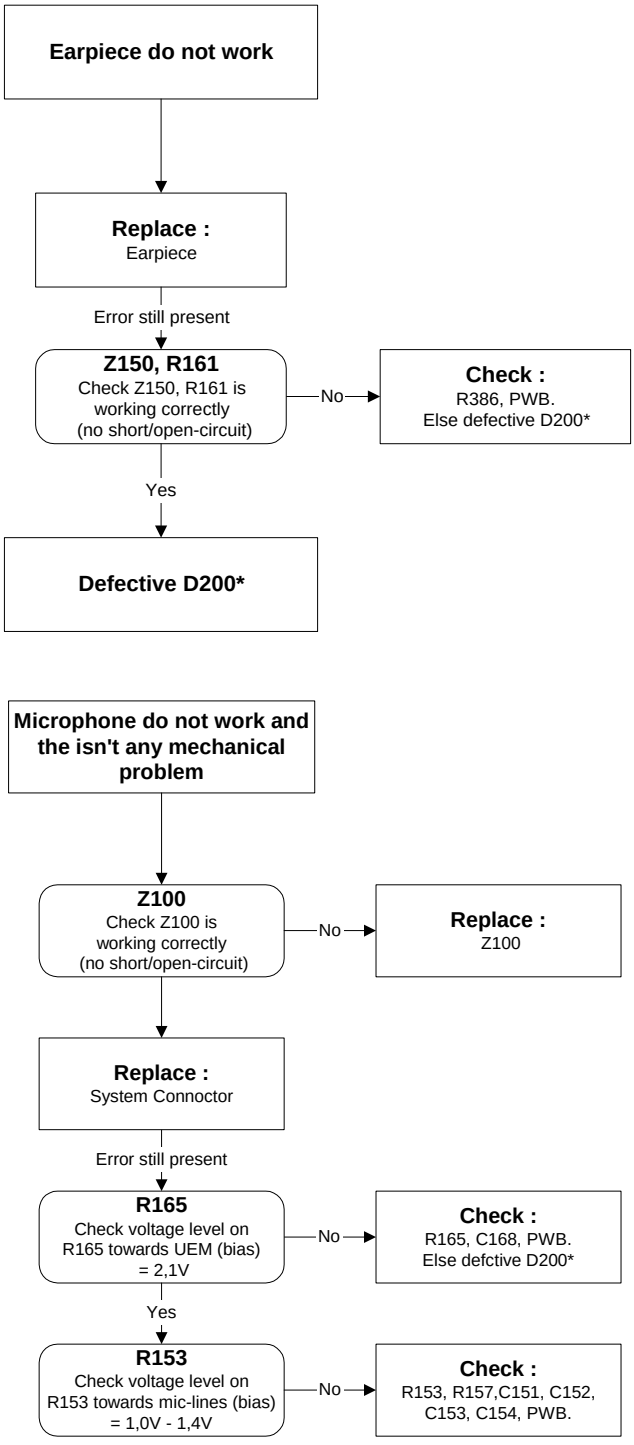

Figure 9: Top: Earpiece troubleshooting, bottom: Microphone troubleshooting

Audio related faults 2: Headset

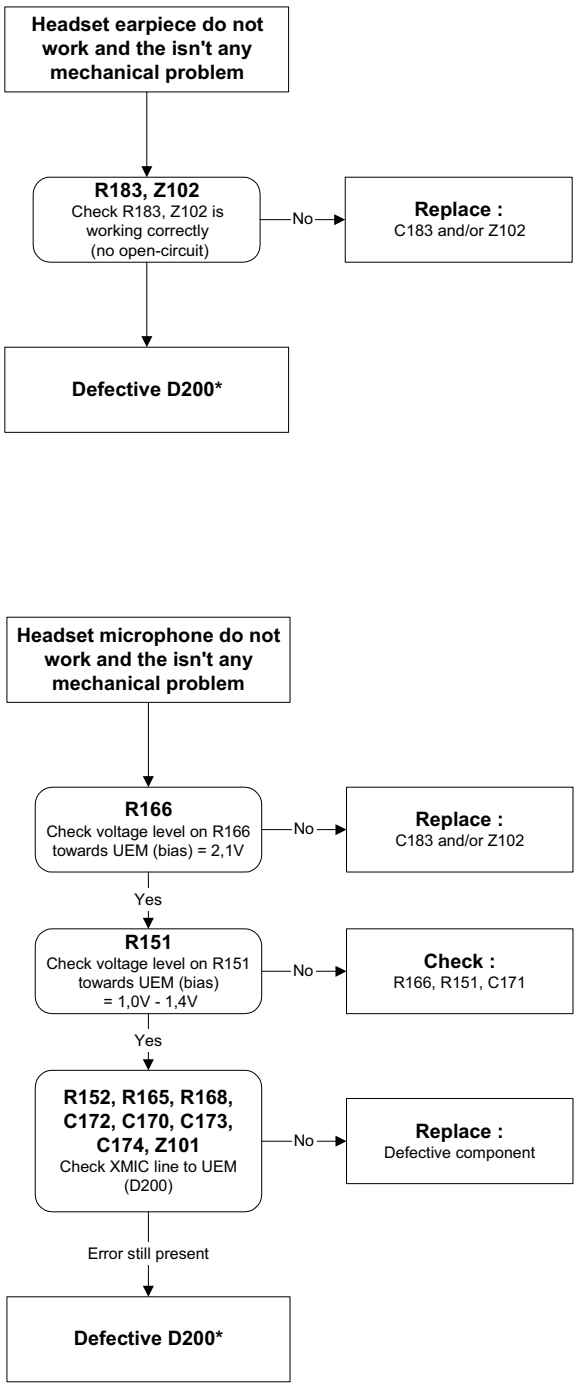

Figure 10: Headset troubleshooting

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Charging failure troubleshooting

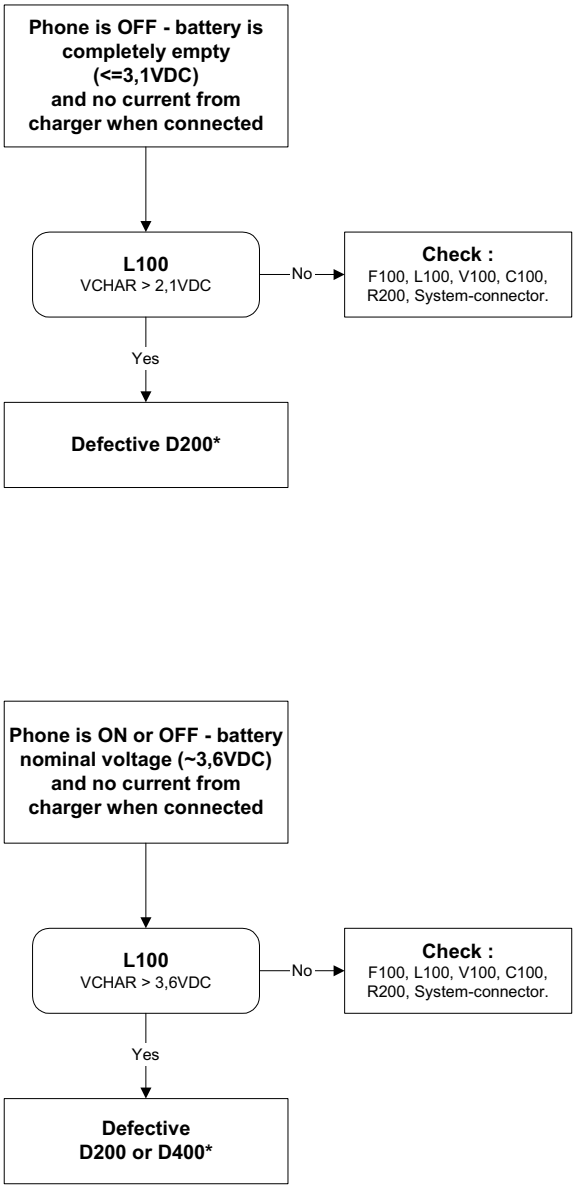

Figure 11: Charging troubleshooting 1

Charging troubleshooting 2

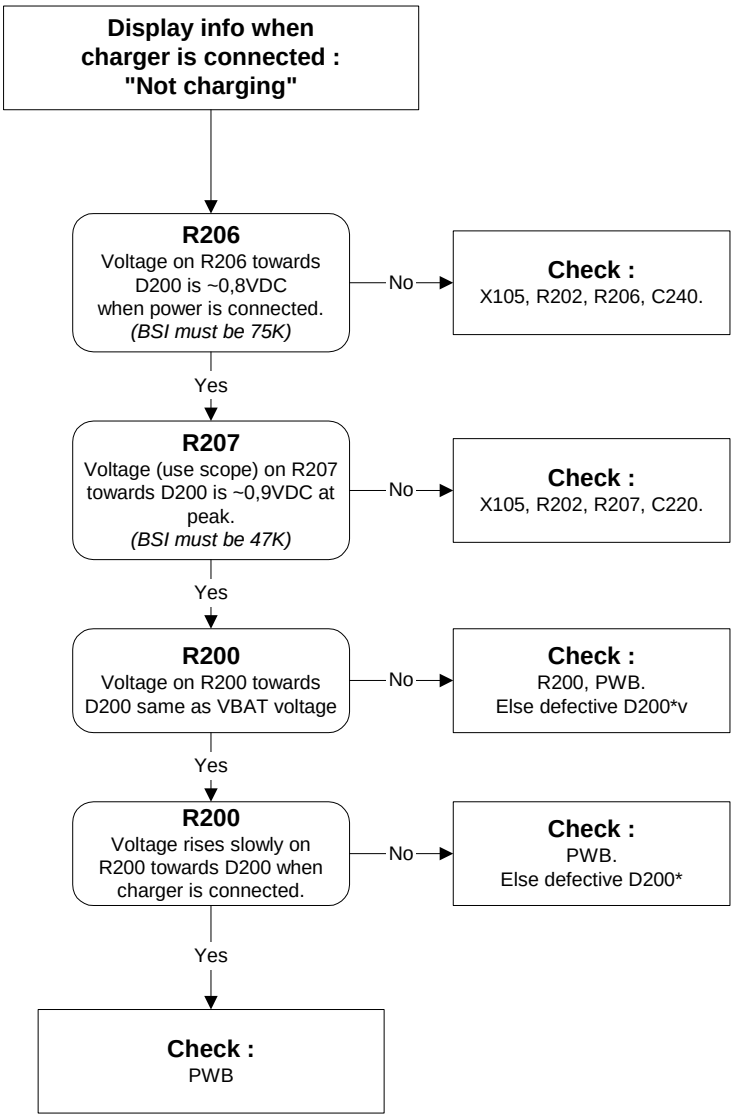

Figure 12: Charging troubleshooting 2

General RF Troubleshooting

Two types of measurements are used in the following. It will be specified if the measurement type is "RF" or "LF".

- RF measurements are done with a Spectrum Analyser and a high-frequency 500 ohm passive probe, for example HP54006A. (Note that when measuring with the 500 ohm probe the signal will be around 20 dB attenuated. The values in the following will have these 20 dB subtracted and represent the real value seen on the spectrum analyser).

Note that the testjig have some losses which must be taken into consideration when calibrating the test system.

- LF (Low frequency) and DC measurements should be done with a 10:1 probe and an oscilloscope. The probe used in the following is 10MW/8pF passive probe. If using another probe then bear in mind that the voltages displayed may be slightly different.

Always make sure the measurement set-up is calibrated when measuring RF parameters on the antenna pad. Remember to include the loss in the module repair jig when realigning the phone.

Most RF semiconductors are static discharge sensitive. So ESD protection must be applied during repair (ground straps and ESD soldering irons). Mjoelner and Bifrost is moisture sensitive so parts must be pre-baked prior to soldering.

Apart from key-components described in this document there are a lot of discrete components (resistors, inductors and capacitors) for which troubleshooting is done by checking if soldering of the component is done properly and checking if the component is missing from PWB. Capacitors can be checked for short-circuiting and resistors for value by means of an ohmmeter, but be aware in-circuit measurements should be evaluated carefully.

In the following both the name EGSM and GSM850 will be used for the lower band and both PCN and GSM1900 will be used for the upper band.

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RF Key component placement

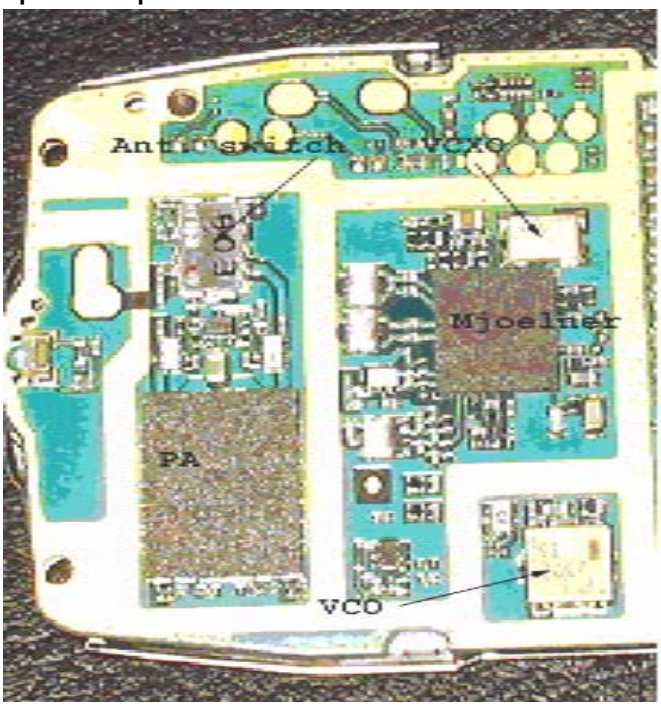

Figure 13: RF key components

Table 1: RF component placement

N600	Mjoelner RF IC
Z601	PCN RX SAW
Z602	EGSM RX SAW
Z603	EGSM TX SAW
B600	26 MHz crystal
G600	VCO (4.0 GHz UHF VCO)
N700	Power Amplifier (PA)
Z700	RX/TX switch

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Refer to the picture below for measuring points at the UEM (D200).

Figure 14: Supply points at UEM (D200)

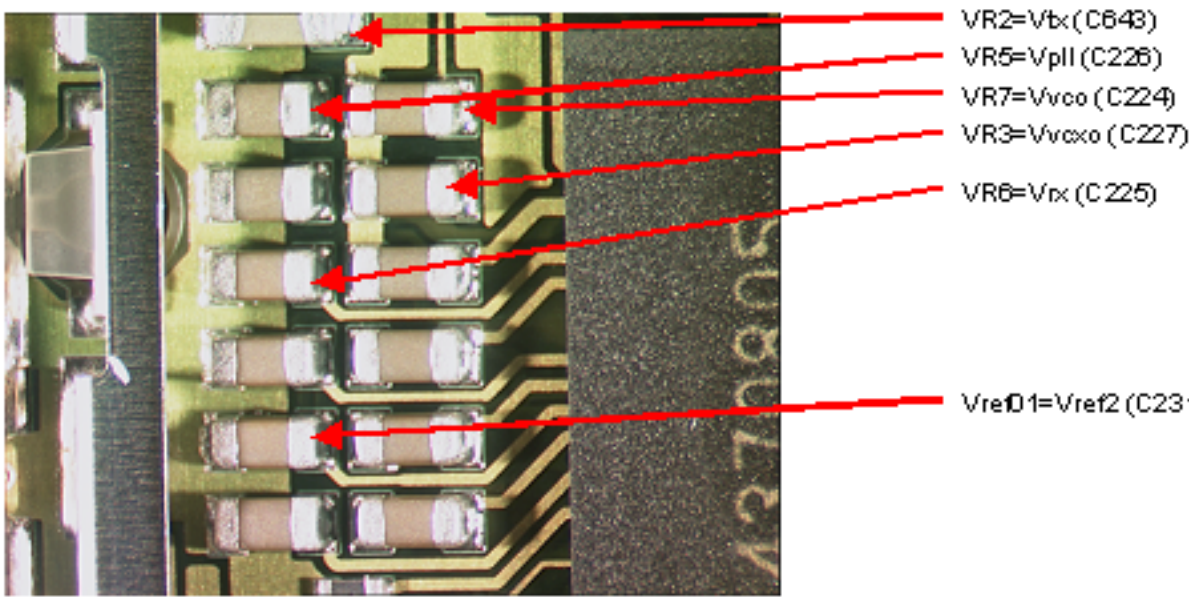
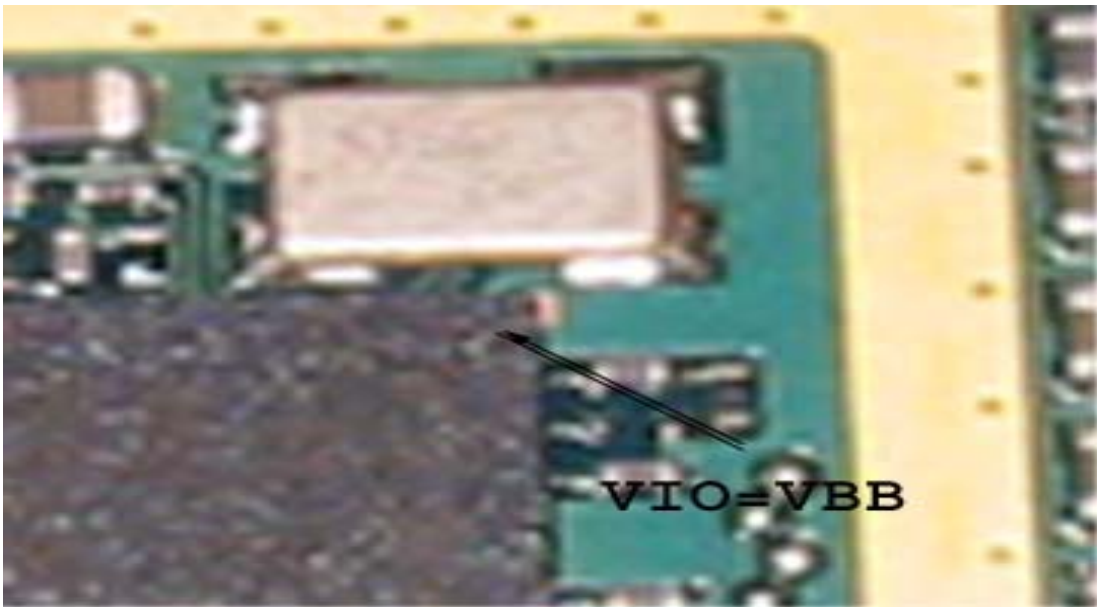


Figure 15: Supply point at Mjoelner (N600)



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RH-36 Receiver troubleshooting

General Instructions for GSM850 RX Troubleshooting

Connect the phone to a PC with the module repair jig.

Start Phoenix and establish connection to the phone

Phoenix commands

RF Controls .Band GSM 850 RX .Continuous mode

Channel 190 .AGC 8 FEG ON + 46 dB

The setup should now look like this:

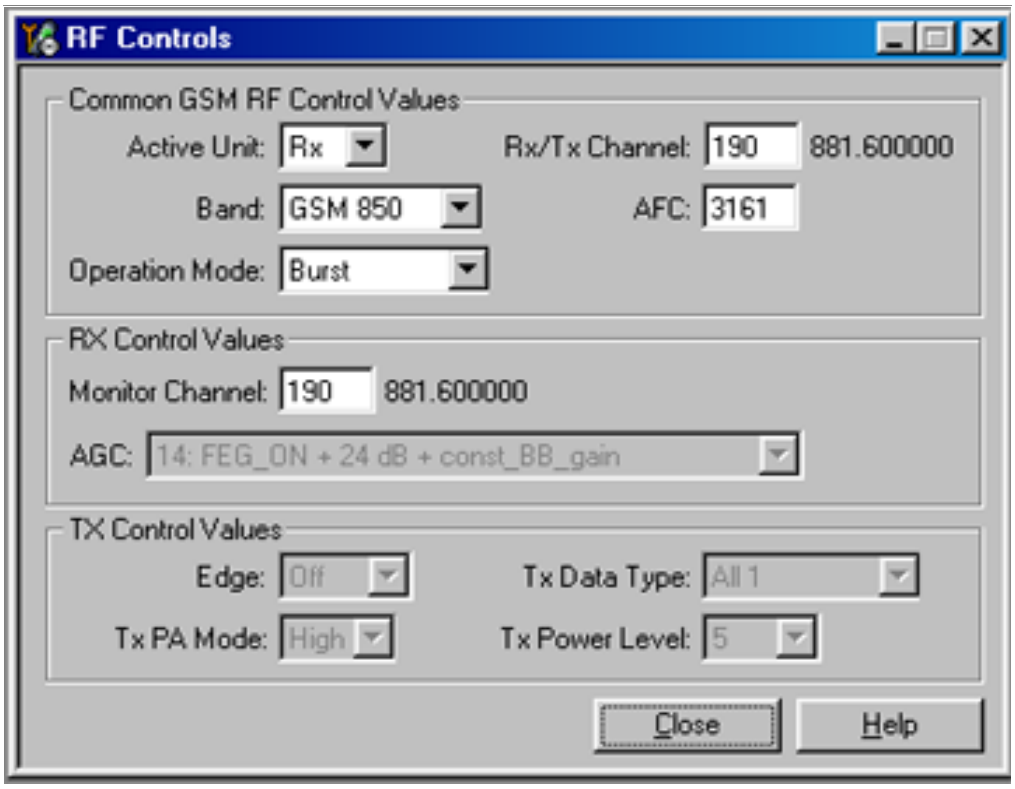
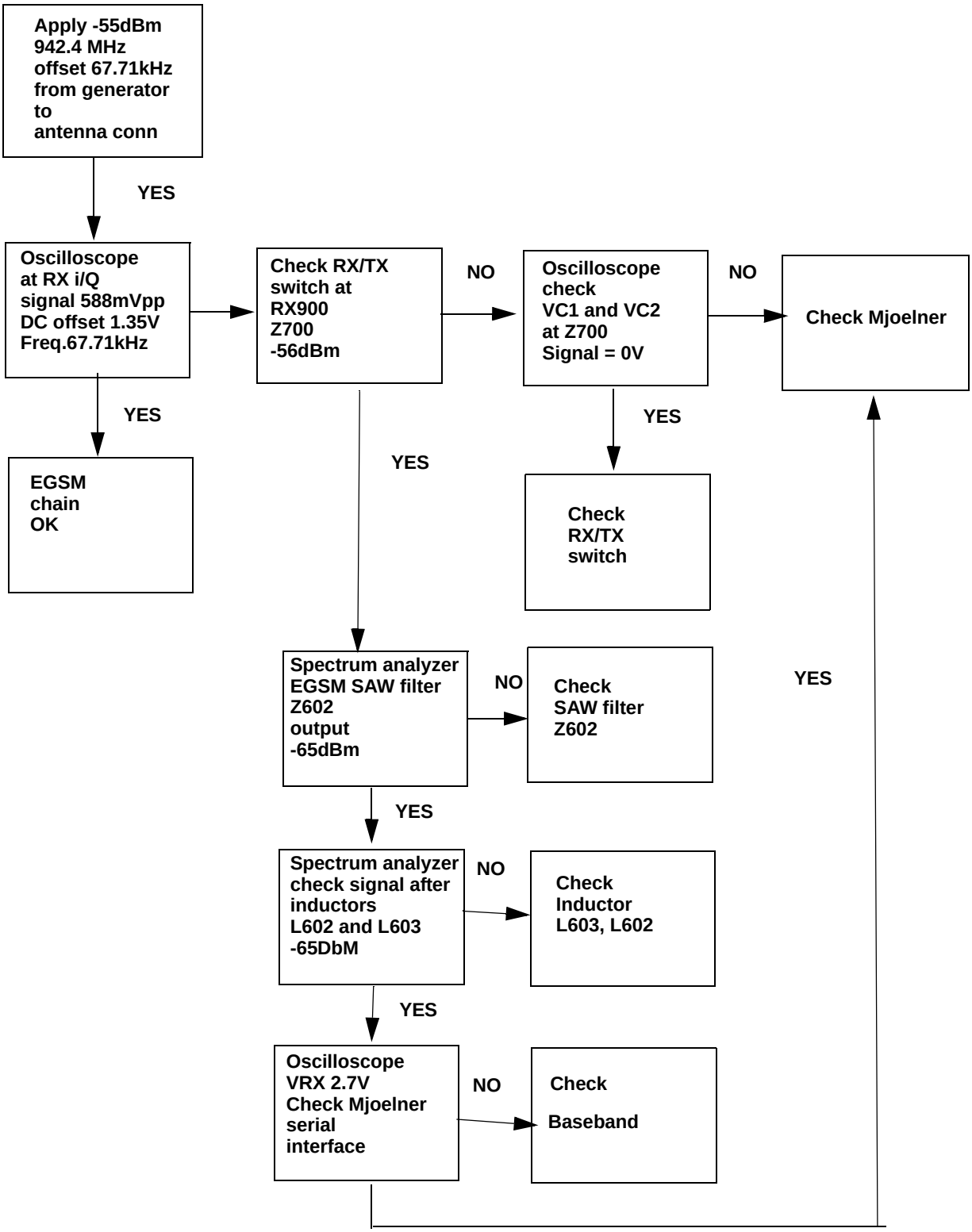


Figure 16: GSM850 RF controls window

Troubleshooting diagram for GSM850 Receiver

Figure 17: GSM850 Receiver troubleshootingt



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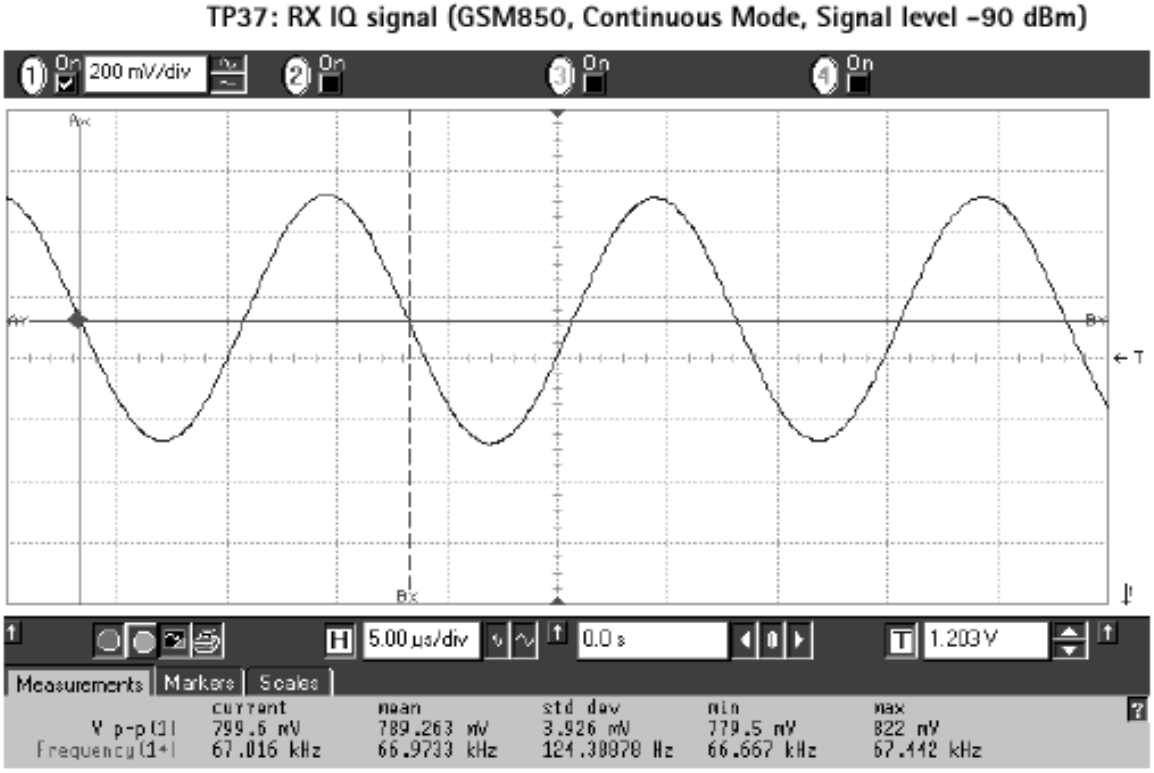
By measuring with an oscilloscope at RXIP or RXQP on a working GSM 850 receiver this picture should be seen.

Signal amplitude peak-peak 789 mV

DC offset 1.2 V

Figure 18: RX850 I / Q signal waveform



General Instructions for RH-36 GSM1900 RX Troubleshooting

Connect the phone to a PC with the module repair jig.

Start Phoenix and establish connection to the phone

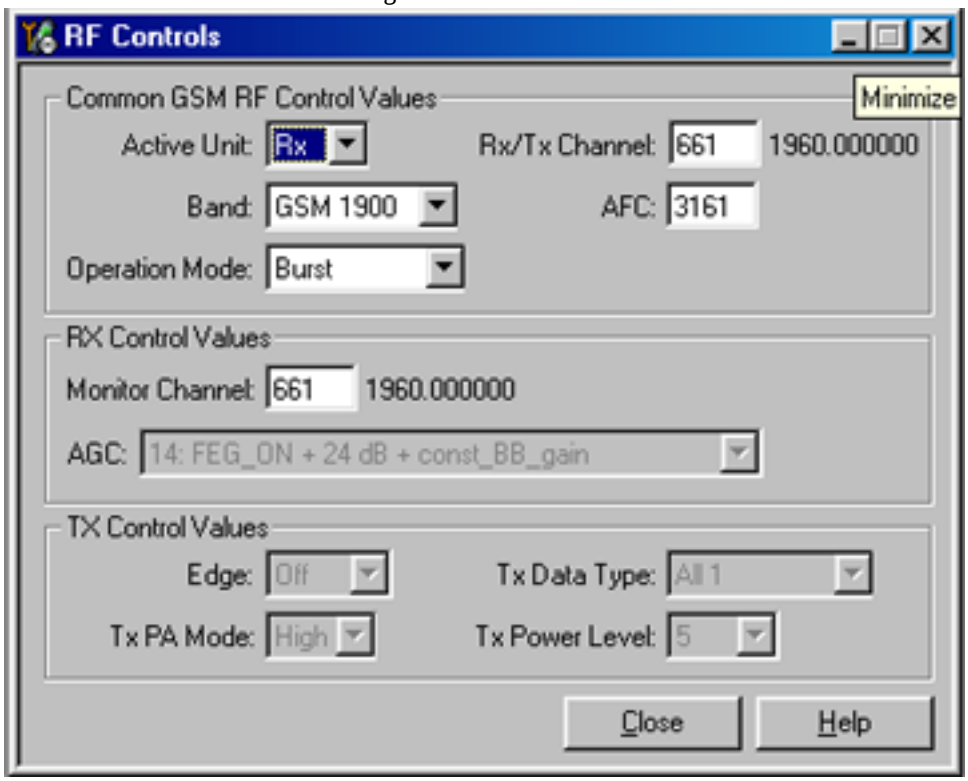
Phoenix commands

RF Controls .Band GSM 1900 RX .Continuous mode

Channel 661 .AGC 8 FEG ON + 46 dB

The setup should now look like this:

Figure 19: GSM1900 RF controls



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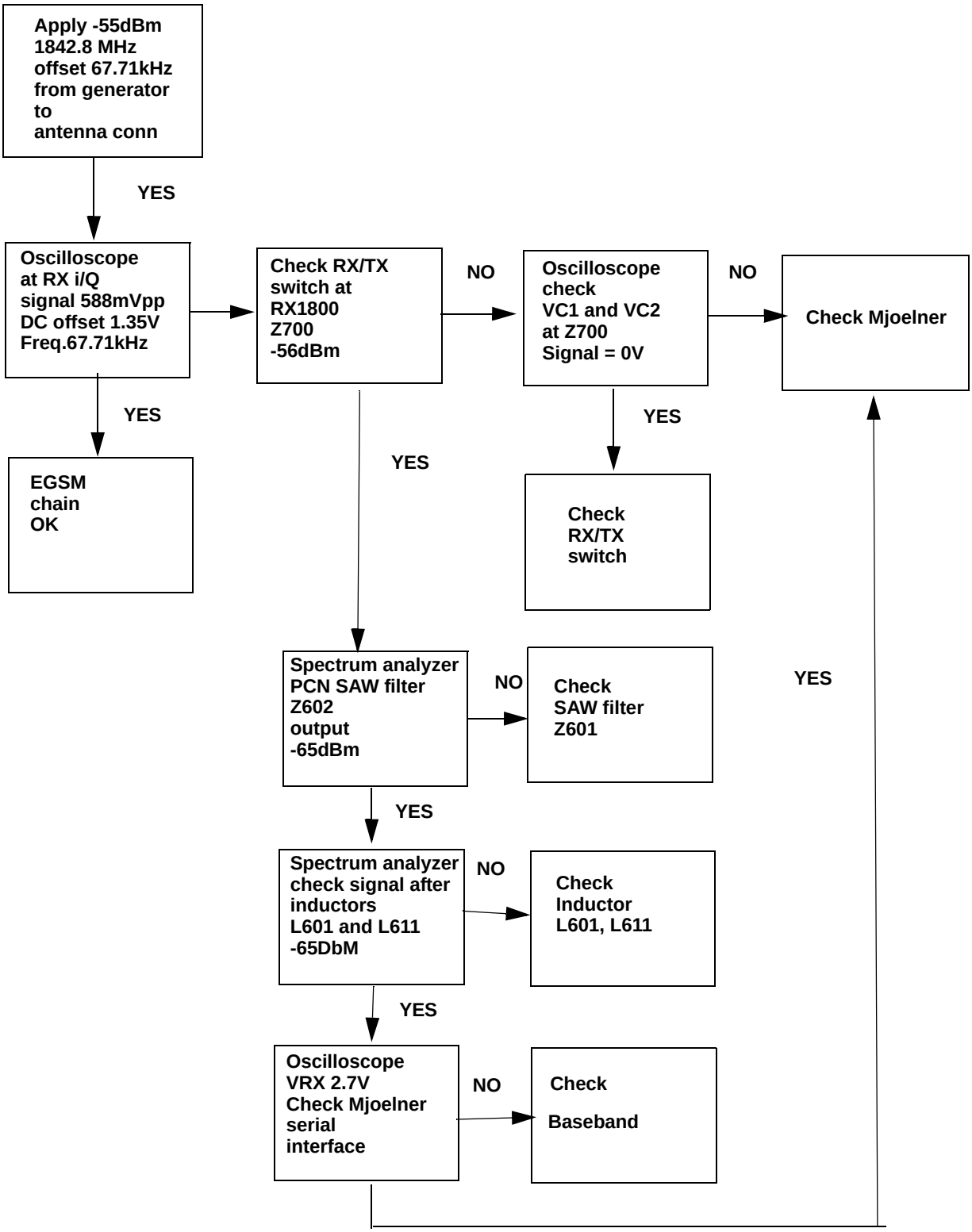
Troubleshooting diagram for GSM1900Receiver

Figure 20: GSM1900 receiver troubleshooting diagram

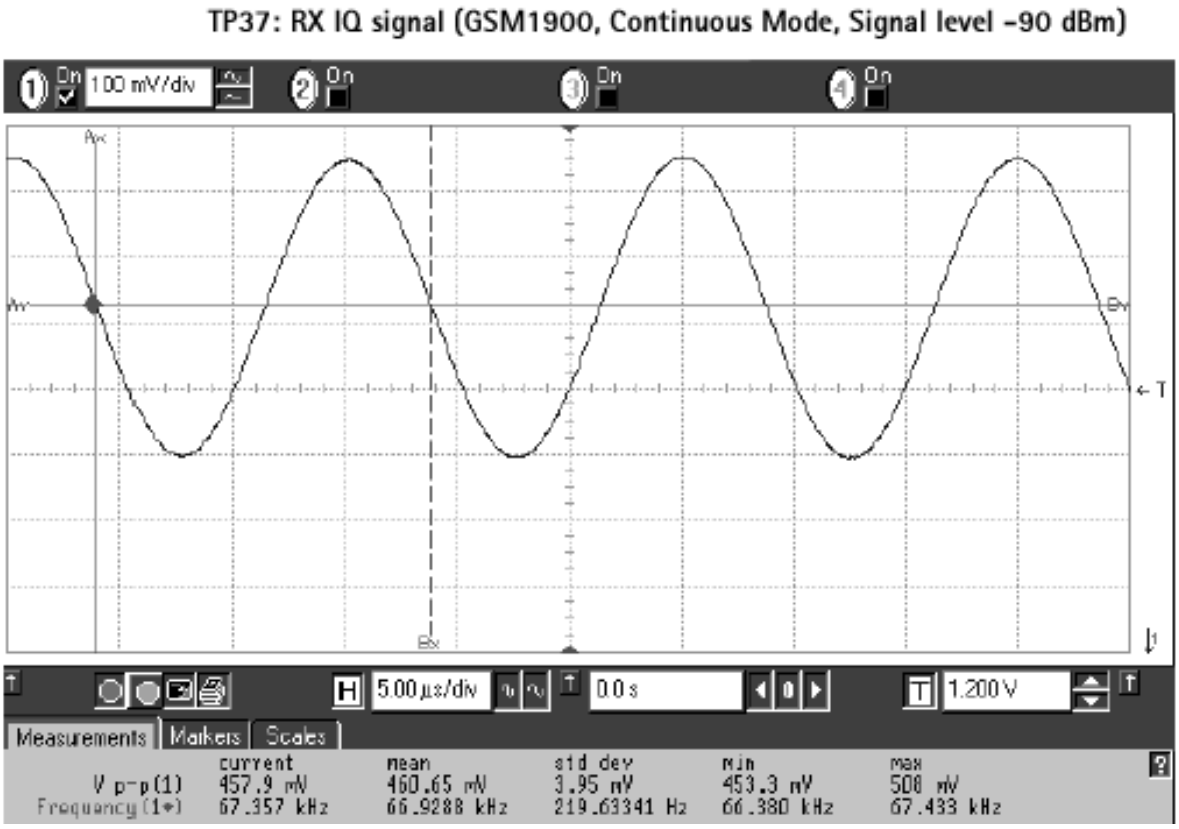


By measuring with an oscilloscope at RXIP or RXQP on a working GSM 1900 receiver this picture should be seen.

Signal amplitude peak-peak 460 mV

DC offset 1.2 V

Figure 21: RX1900 I/Q signal waveform



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Measurement points in the receiver

Figure 22: RX measurements point at the RX/TX Switch - Z700

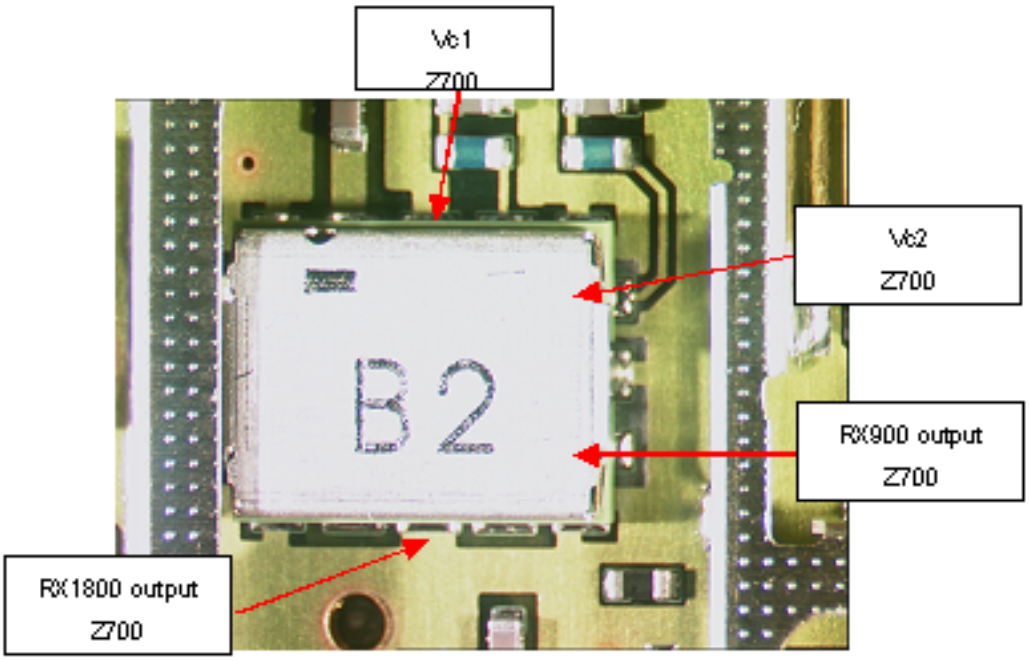

Figure 23: Measurements points at the RX-Filters – Z601 / Z602

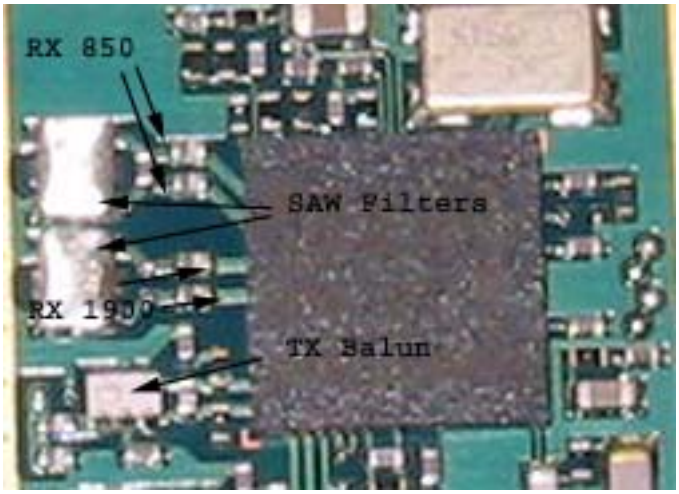

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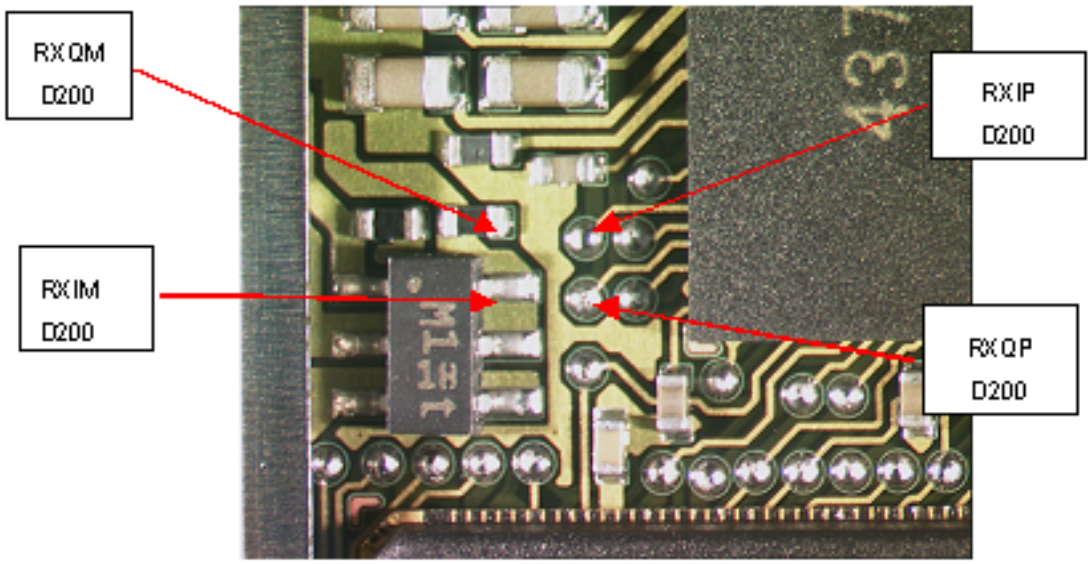
Figure 24: RX I/Q Signals, Baseband shielding can UEM (D200)



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RH-36 Transmitter troubleshooting

Measurement points for the transmitter

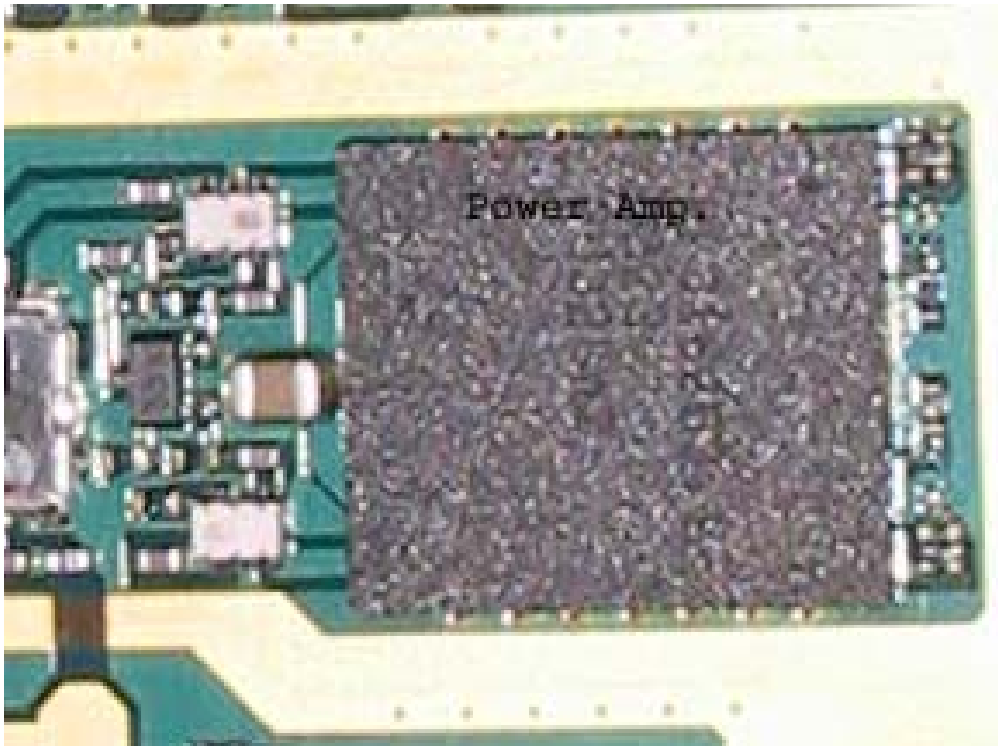

Figure 25: Figure 15: TX measuremnet points in the PA (N700) shielding can

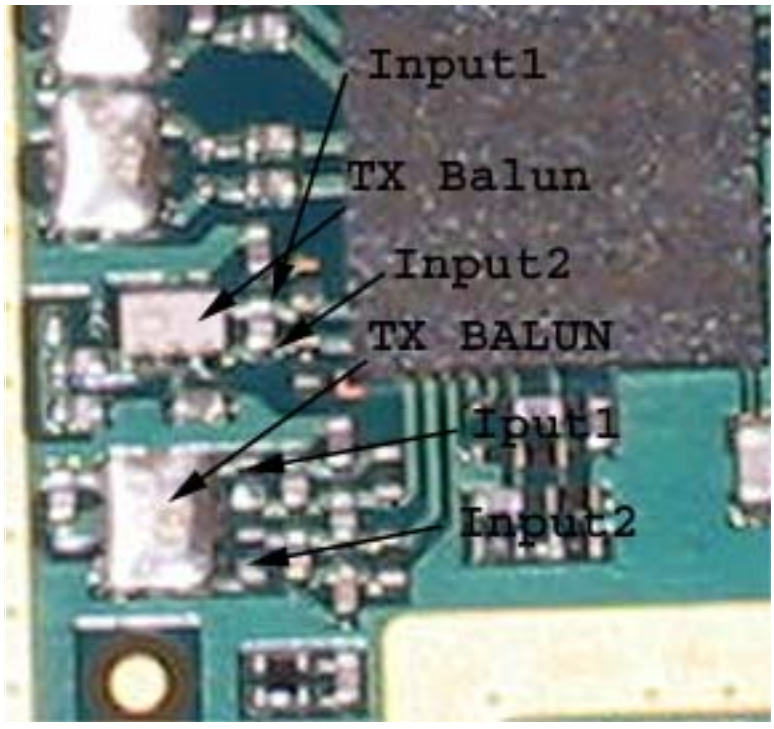

Figure 26: TX measurement point in Mjolner (N600) shielding can

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General instructions for RH-36 GSM TX troubleshooting

Apply a RF-cable to the RF-connector to allow the transmitted signal act as normal. RF-cable should be connected to measurement equipment or to at least a 10-dB attenuator, otherwise the PA may be damaged.

Start Phoenix-Service-Software and establish a connection to the phone e.g. FBUS.

Select File and Product: Gemini

Select: Maintenance, Testing and RF Controls

Band:	GSM 850
Active Unit:	TX
Tx Power Level:	5
Tx Data Type:	Random

Your screen should look like:

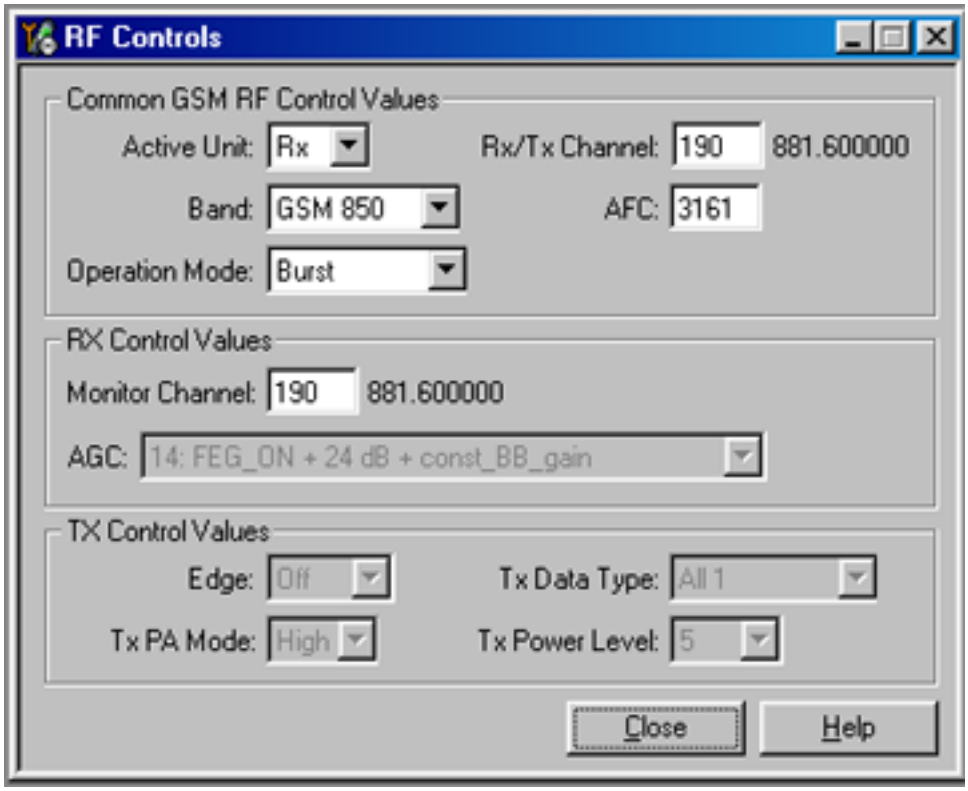


Figure 27: GSM850 RF controls window

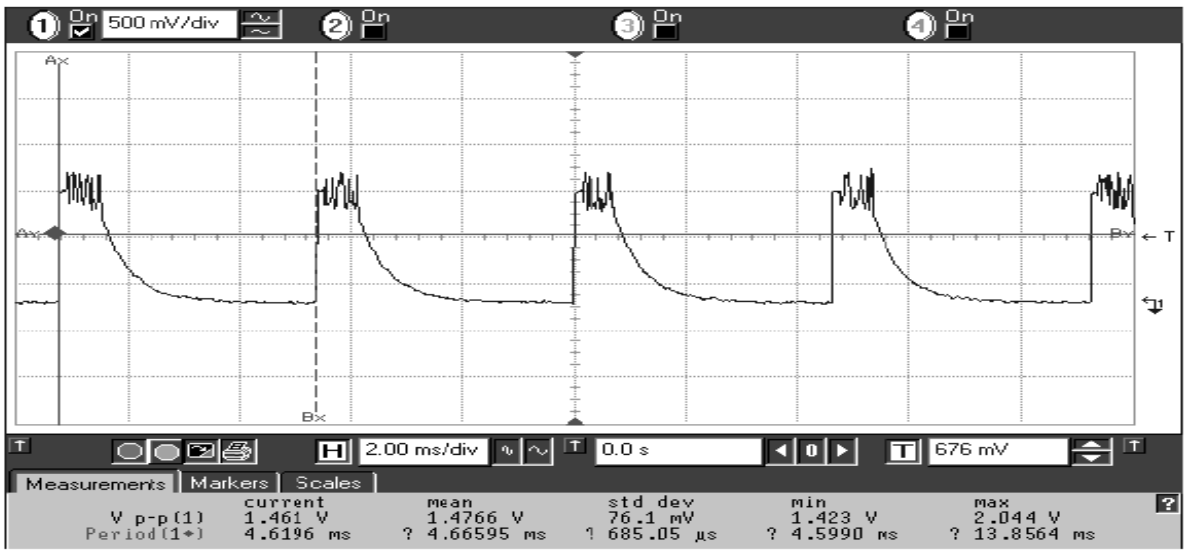
GSM850 TX output power

Measure the output power of the phone; it should be around 32.5 dBm.

Remember the loss in the jig; around 0.3 dB.

Figure 28: VPCTRL_G & TXC

Figure 6: TP21: TX I/Q signal



General instructions for RH-36 GSM1900 TX troubleshooting

Apply a RF-cable to the RF-connector to allow the transmitted signal act as normal. RF-cable should be connected to measurement equipment or to at least a 10-dB attenuator, otherwise the PA may be damaged.

Start Phoenix-Service-Software and establish a connection to the phone e.g. FBUS.

Phoenix commands

RF Controls .Band GSM 1900 RX .Continuous mode

Channel 661

Your screen should look like:

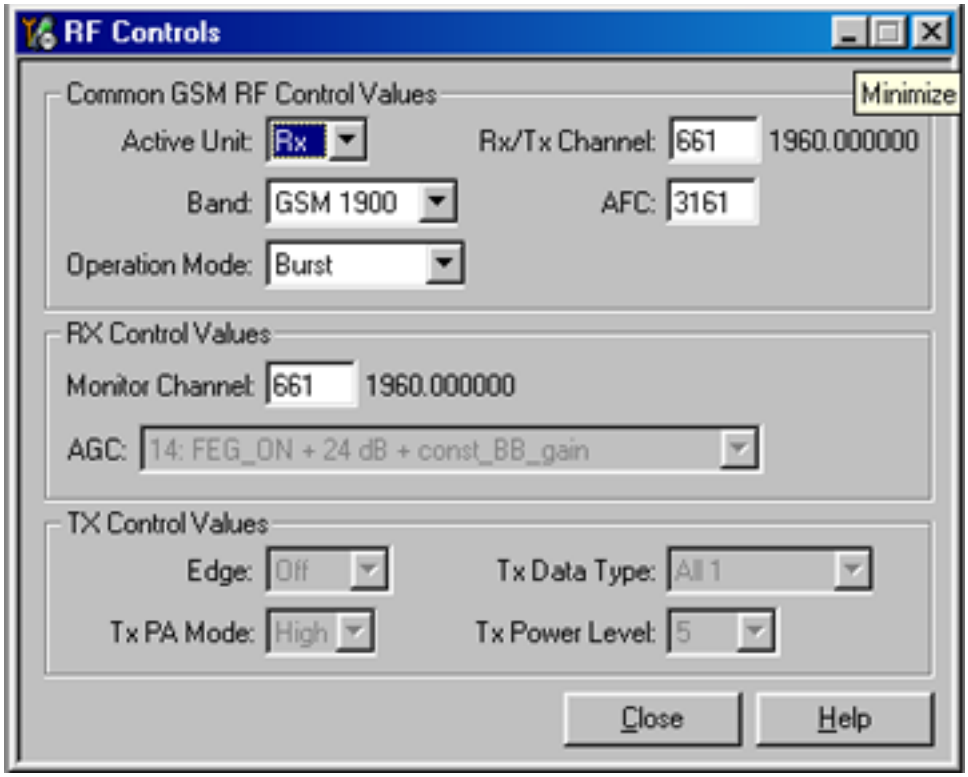


Figure 29: GSM1900 RF controls screen shot

GSM1900 TX output power

Measure the output power of the phone.

It should be around 28.5 dBm.

Remember the loss in the jig; around 0.7 dB.

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Troubleshooting diagram for GSM1900 TX

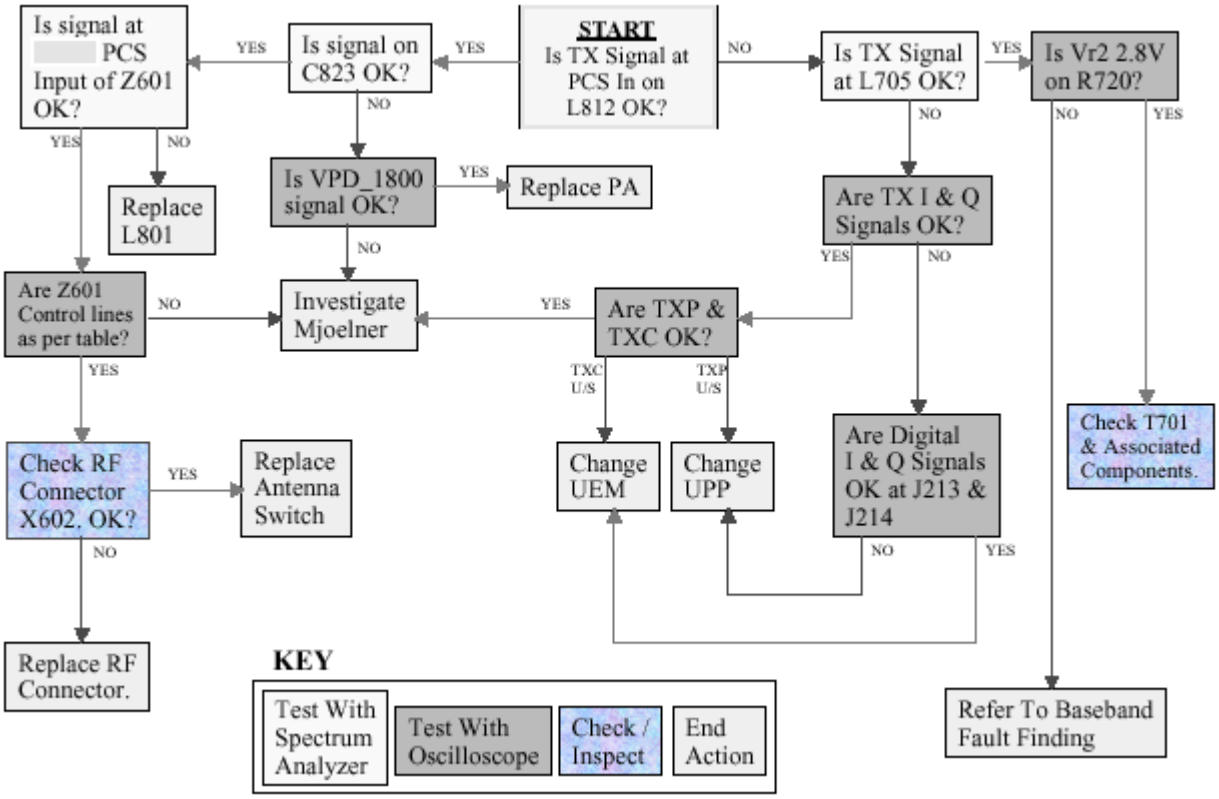

Figure 30: GSM1900 TX troubleshooting

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General Instructions for RH-18/38 GSM900 RX Trouble-shooting

Connect the phone to a PC with the module repair jig.

Start Phoenix and establish connection to the phone

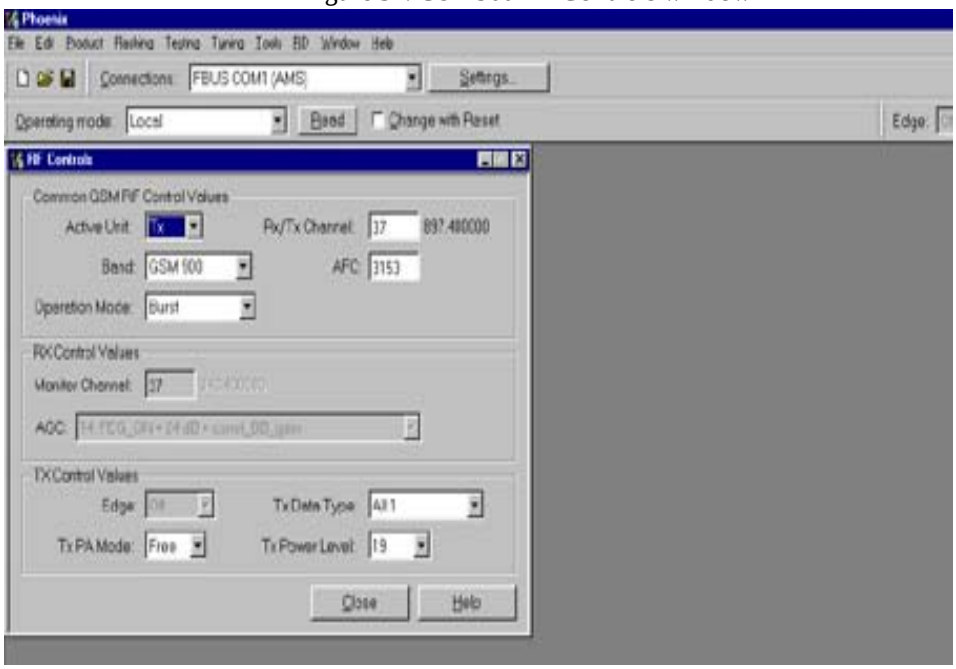
Phoenix commands

RF Controls .Band GSM 900 RX .Continuous mode

Channel 190 .AGC 8 FEG ON + 46 dB

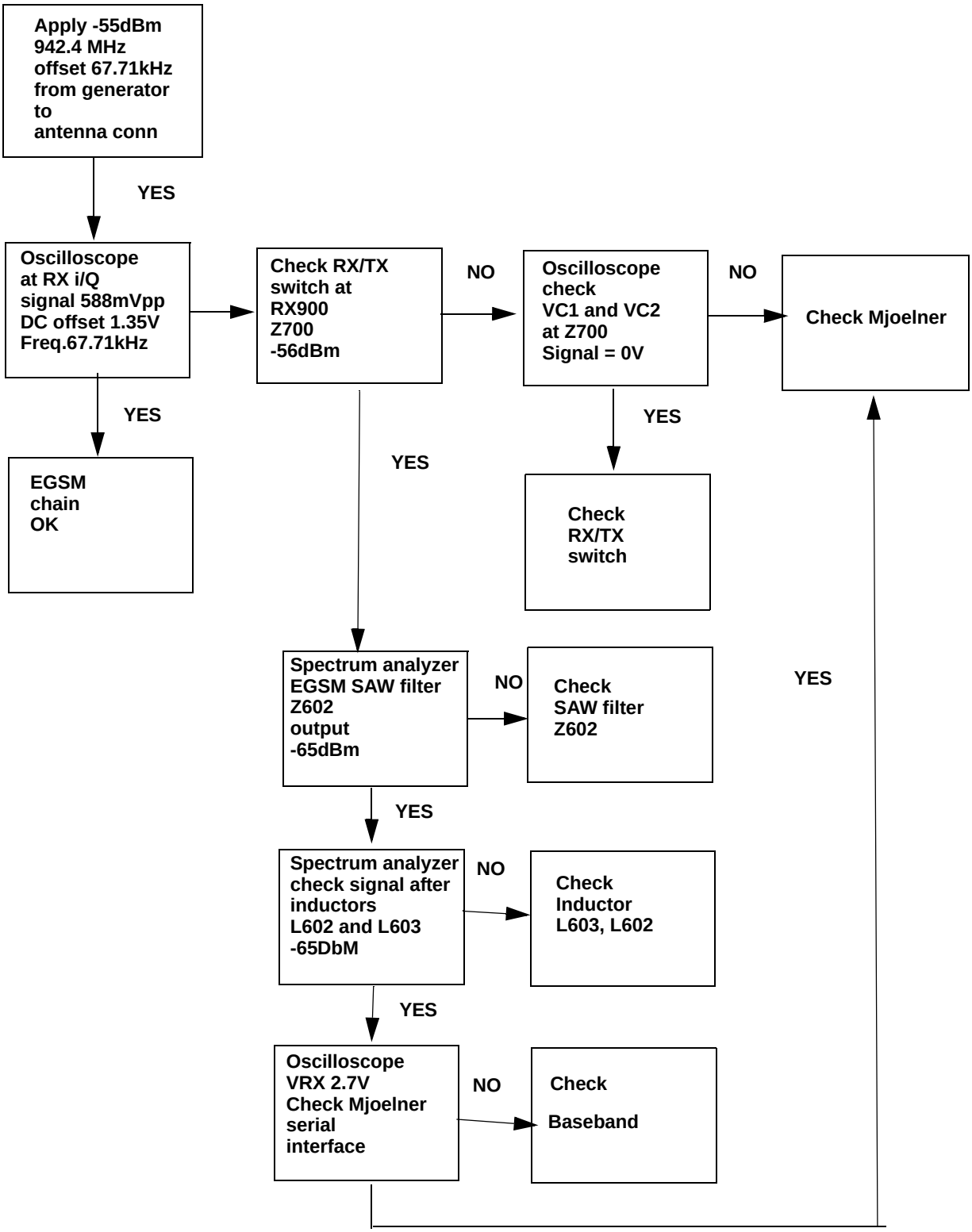
The setup should now look like this:

Figure 31: GSM900 RF Controls window



Troubleshooting Chart for GSM900 Receiver

Figure 32: EGSM Receiver Troubleshooting chart

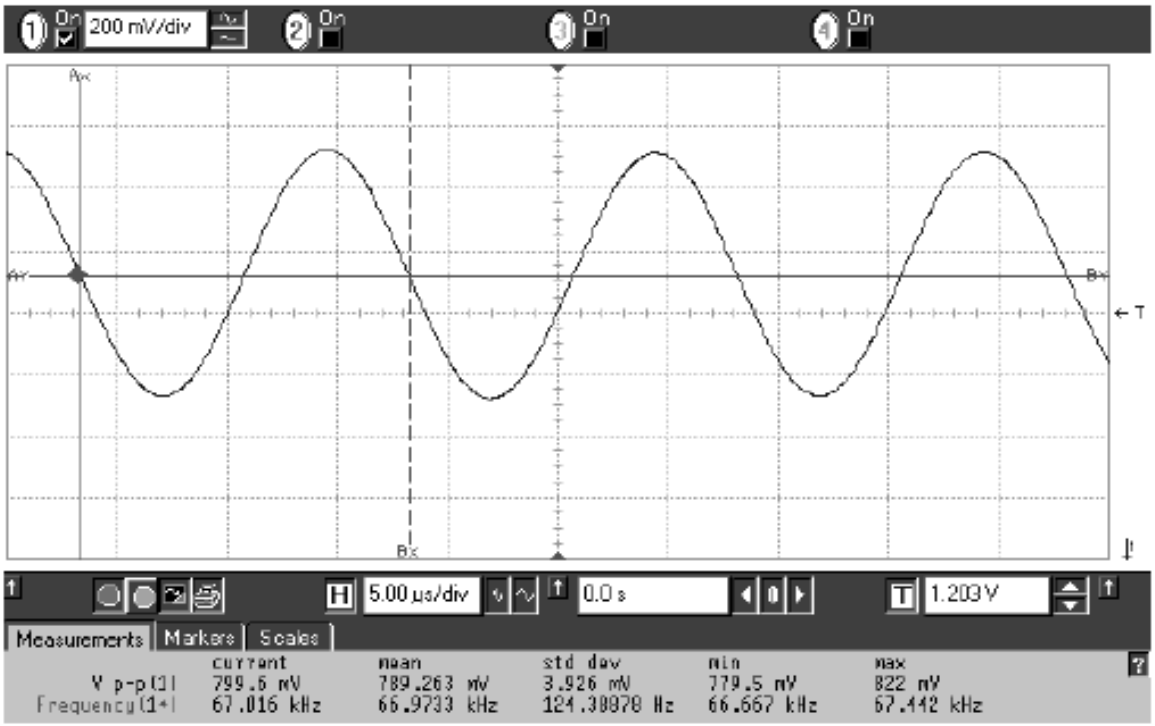


By measuring with an oscilloscope at RXIP or RXQP on a working GSM 900 receiver this picture should be seen.

Signal amplitude peak-peak 789 mV

DC offset 1.2 V

Figure 33: RX900 I / Q signal waveform



General Instructions for GSM1800 RX Troubleshooting

Connect the phone to a PC with the module repair jig.

Start Phoenix and establish connection to the phone

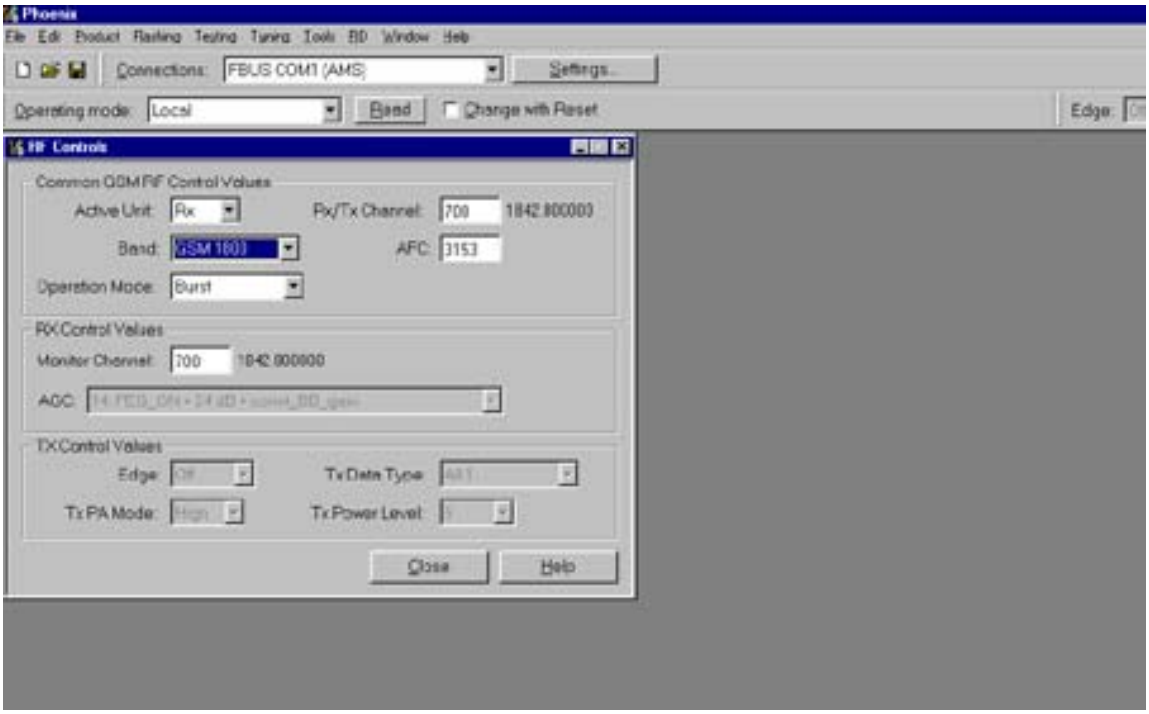
Phoenix commands

RF Controls .Band GSM 1800 RX .Continuous mode

Channel 661 .AGC 8 FEG ON + 46 dB

The setup should now look like this:

Figure 34: GSM1800 RF control window



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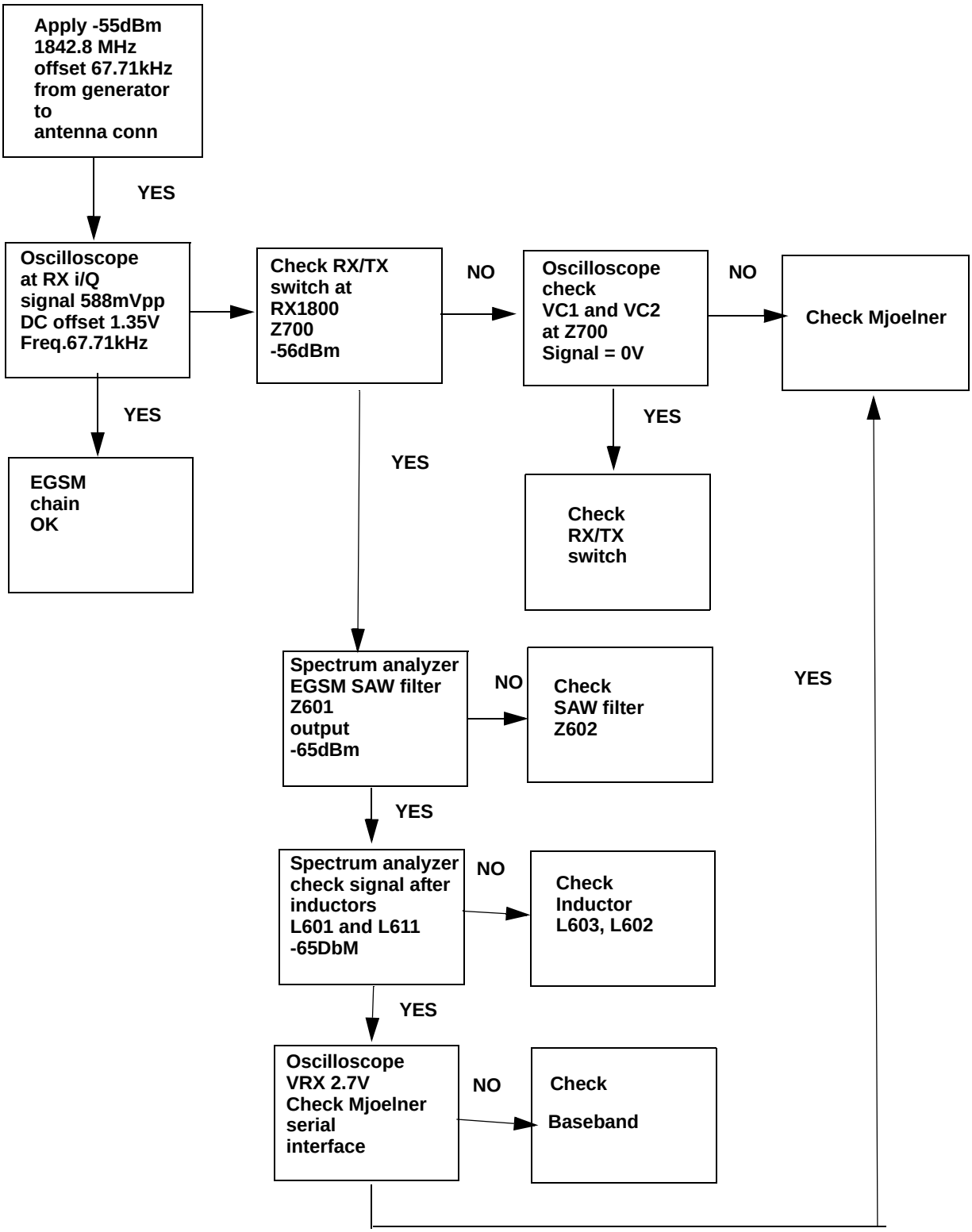
Troubleshooting Chart for GSM1800Receiver

Figure 35: GSM1800 receiver Troubleshooting chart

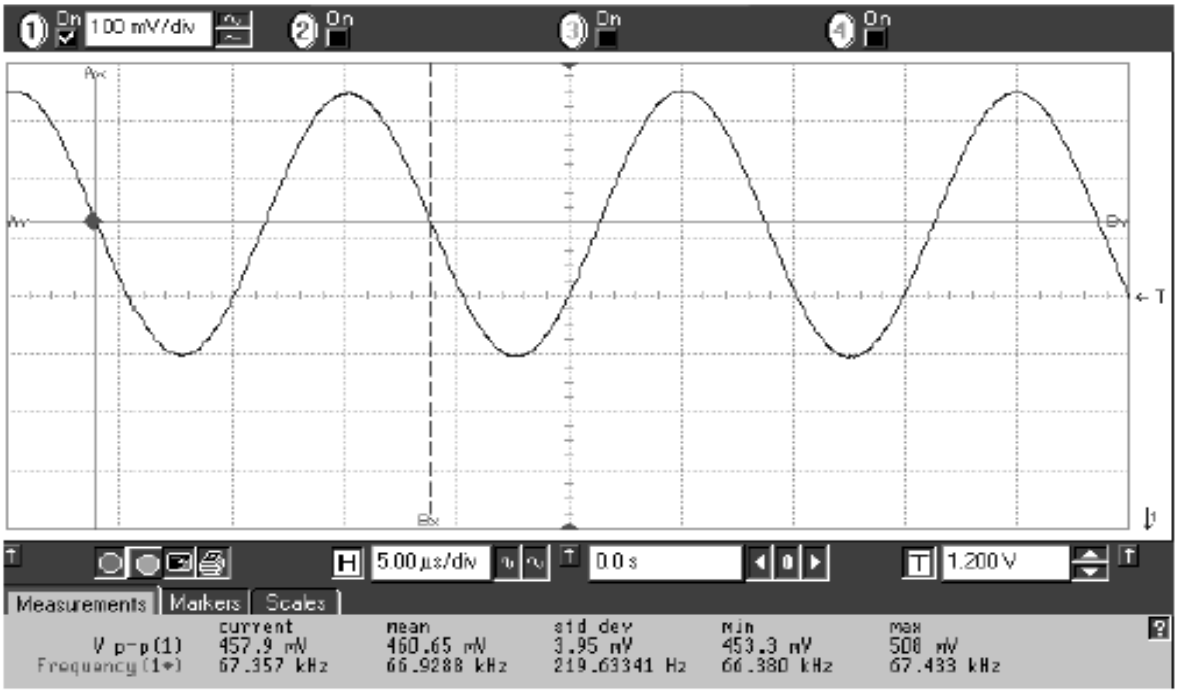


XIP or RXQP on a working GSM 1800 receiver this picture should be seen.

Signal amplitude peak-peak 460 mV

DC offset 1.2 V

Figure 36: RX1800 I / Q signal waveform



Measurement points in the receiver

Figure 37: RX measurements point at the RX/TX Switch - Z700

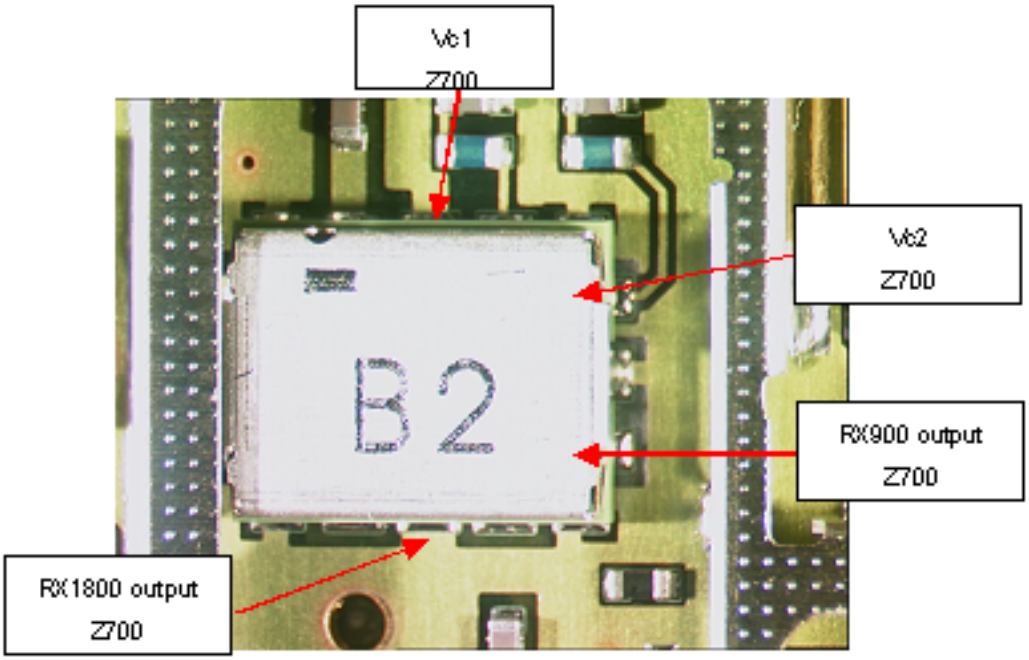


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Figure 38: Measurements points at the RX-Filters – Z601 / Z602

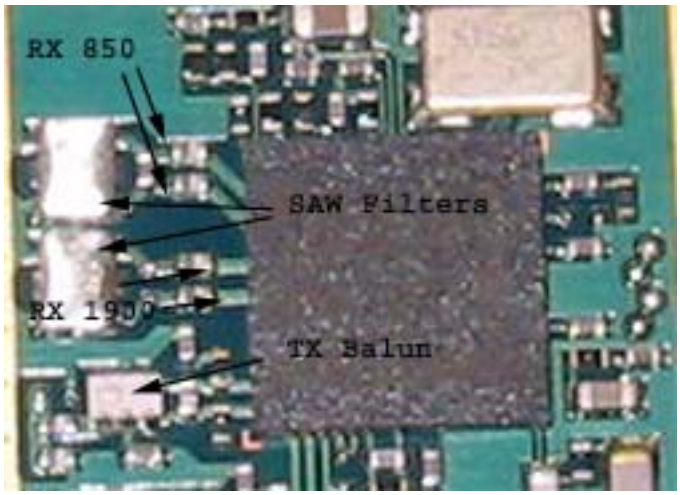
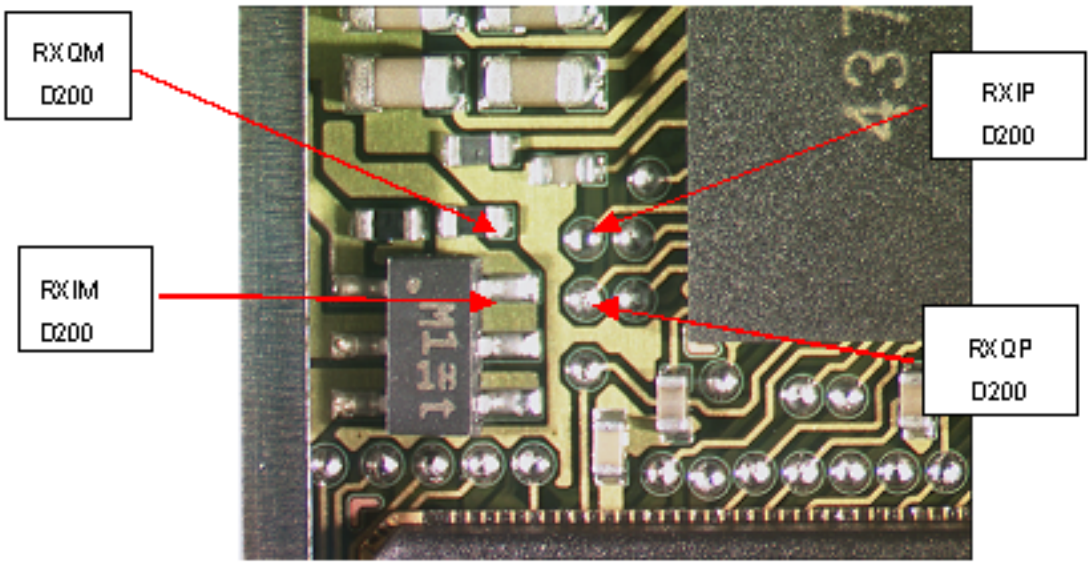


Figure 39: RX I / Q Signals, Baseband shielding can UEM (D200)



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RH-18/38 Transmitter troubleshooting

Measurement points for the transmitter

Figure 40: TX measuremnet points in the PA (N700) shielding can

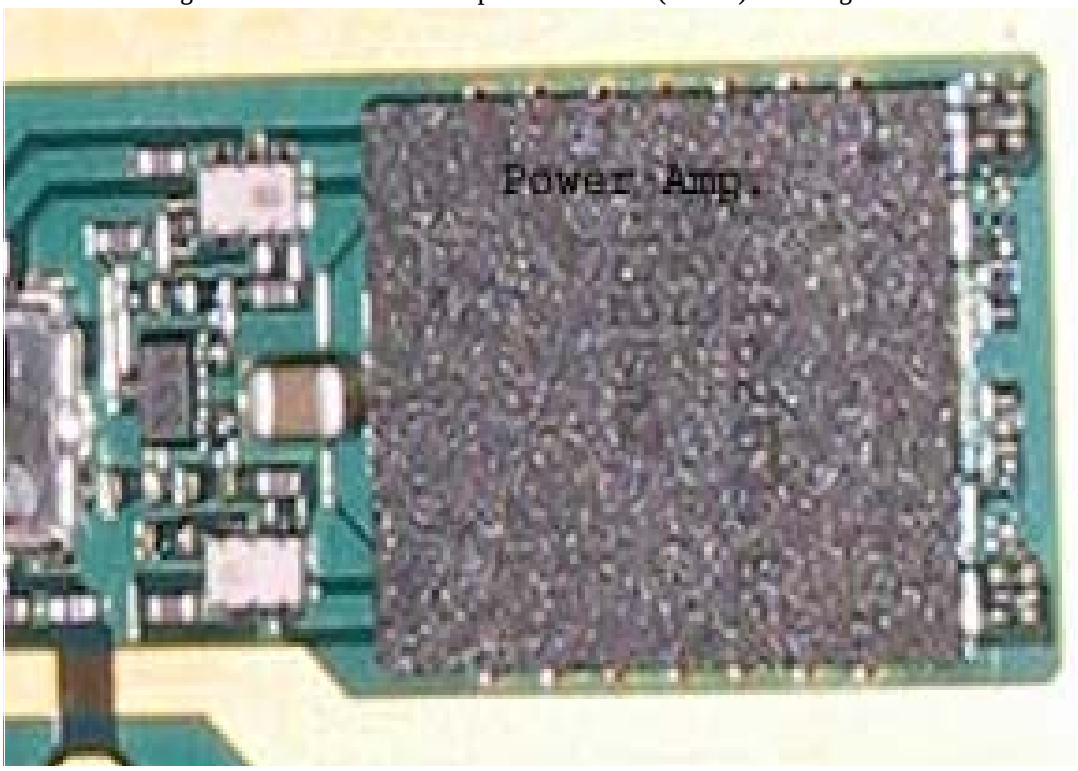
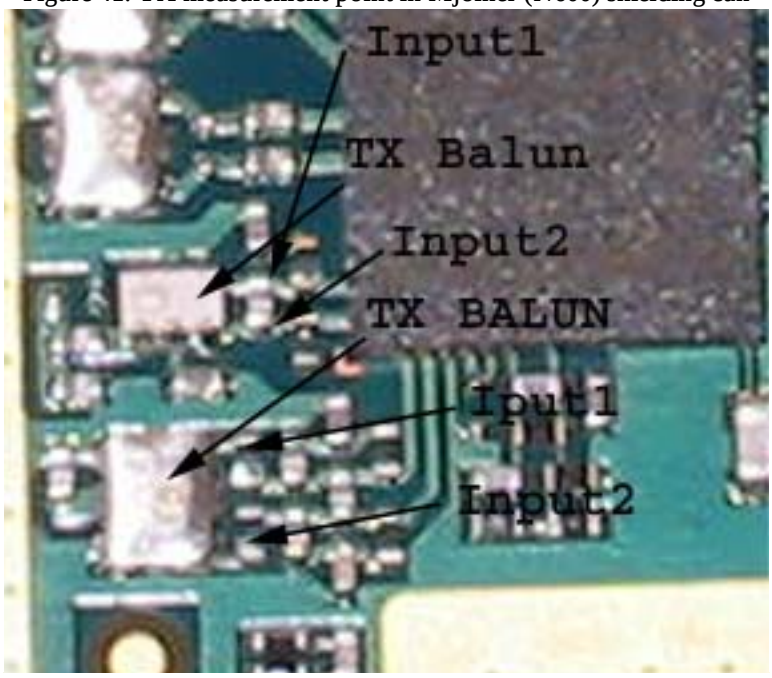


Figure 41: TX measurement point in Mjolner (N600) shielding can



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General instructions for RH-18/38 GSM TX troubleshooting

Apply a RF-cable to the RF-connector to allow the transmitted signal act as normal. RF-cable should be connected to measurement equipment or to at least a 10-dB attenuator, otherwise the PA may be damaged.

Start Phoenix-Service-Software and establish a connection to the phone e.g. FBUS.

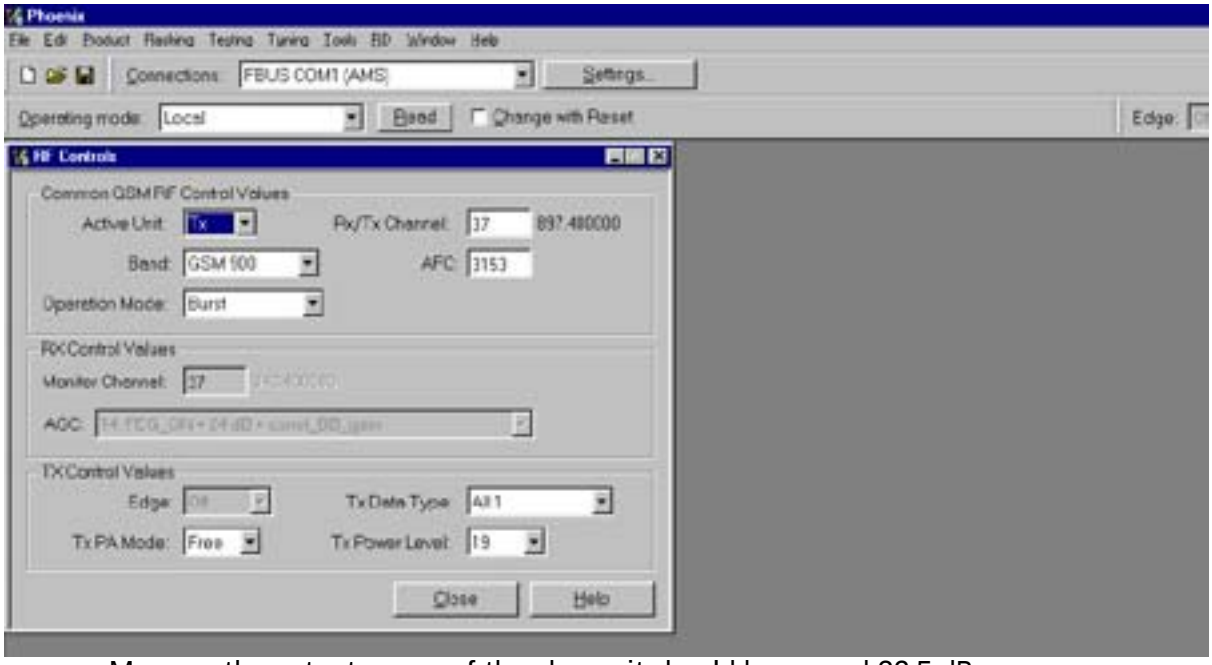
Select File and Product: RH-18

Select: Maintenance, Testing and RF Controls

Band:	GSM 900
Active Unit:	TX
Tx Power Level:	19
Tx Data Type:	All 1

Your screen should look like:

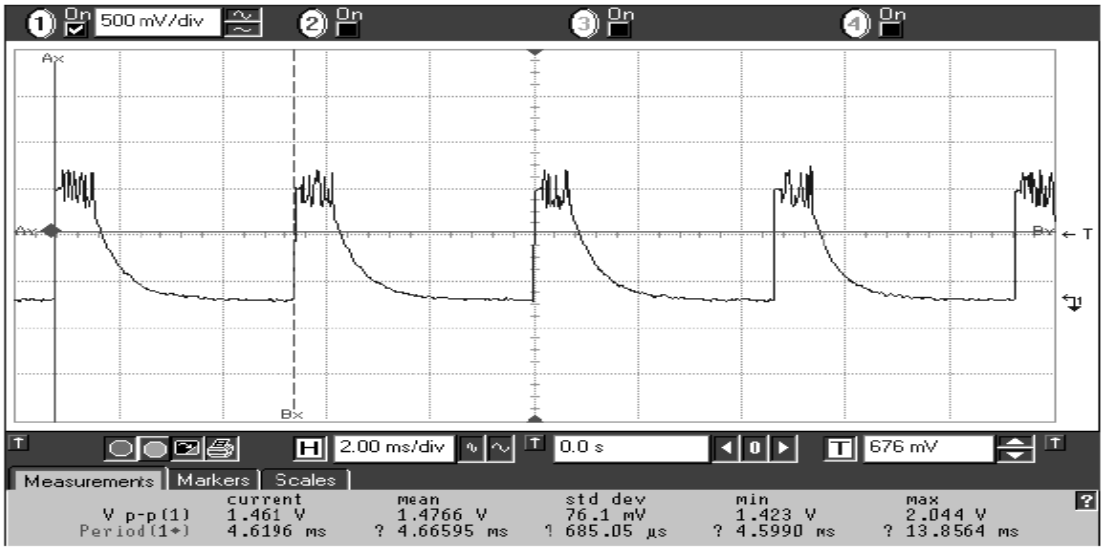
Figure 42: GSM900 RF controls window



Measure the output power of the phone; it should be around 32.5 dBm.

Remember the loss in the jig; around 0.3 dB.

Figure 43: VPCTRL_G and TXC signal



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PCN Transmitter General instructions for PCN TX troubleshooting

Apply a RF-cable to the RF-connector to allow the transmitted signal act as normal. RF-cable should be connected to measurement equipment or to at least a 10-dB attenuator, otherwise the PA may be damaged.

Start Phoenix-Service-Software and establish a connection to the phone e.g. FBUS.

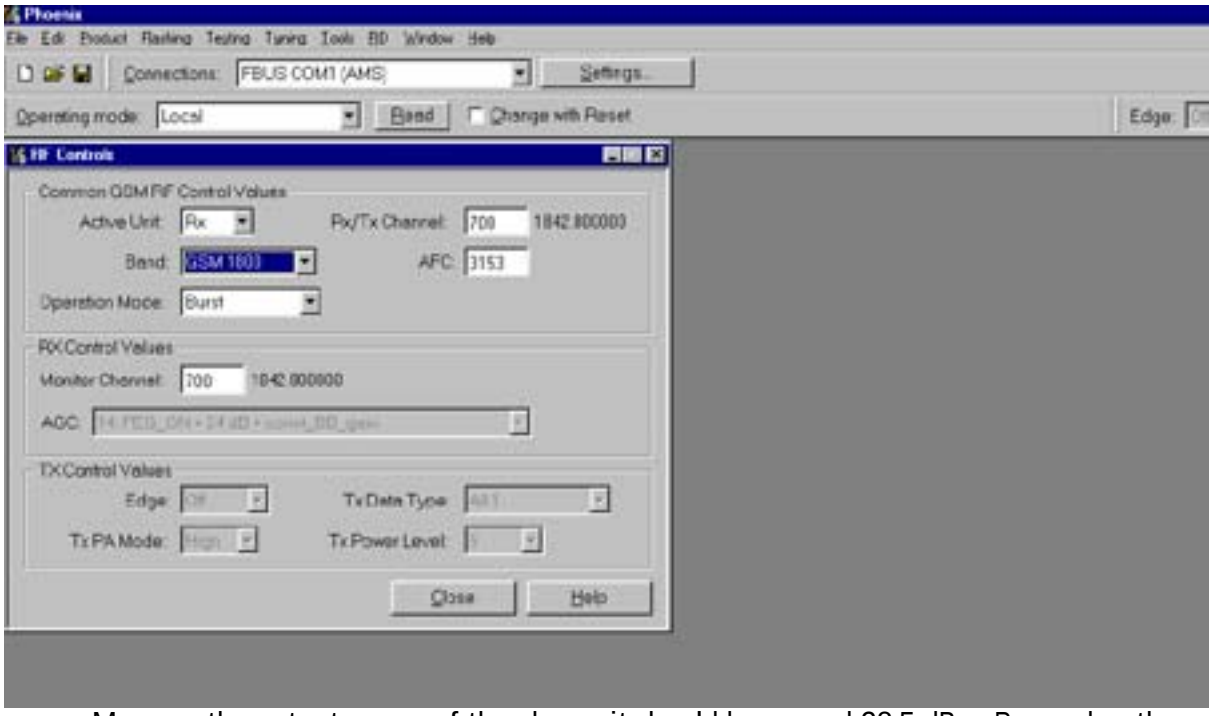
Phoenix commands

RF Controls .Band GSM 1800 RX .Continuous mode

Channel 37 .AGC 14 FEG ON + 24 dB

Your screen should look like:

Figure 44: RF controls window



Measure the output power of the phone; it should be around 28.5 dBm. Remember the loss in the jig; around 0.7 dB.

Troubleshooting chart for PCN transmitter: refer to Figure 17, “GSM1900 receiver troubleshooting diagram,” on page 24

Synthesizer

There is only one PLL synthesizer generating Local Oscillator frequencies for both RX and TX in both bands (PCN and EGSM). The VCO frequency is divided by 2 for PCN operation or by 4 for EGSM operation inside the Mjoelner IC.

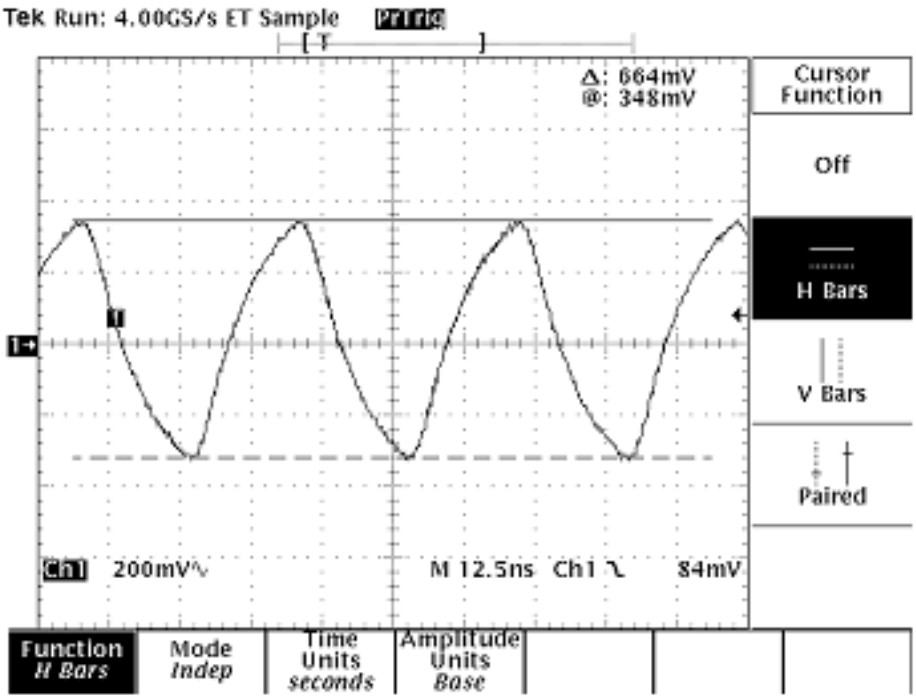
26 MHz Reference Oscillator (VCXO)

The 26 MHz oscillator is located in the Mjoelner IC (N600). The coarse frequency for this oscillator is set by an external crystal (B600). The reference oscillator is used as a reference frequency for the PLL synthesizer and as the system clock for BaseBand. The 26MHz signal is divided by 2 to achieve 13MHz inside the UPP IC (D400).

The 26 MHz signal from the VCXO can be measured by probing R425 (must be measured on the UPP side of R425 i.e. the end **not** connected to C425). The level at this point is approx. 700mVpp. Frequency of this oscillator is adjusted by changing the AFC-register inside the Mjoelner IC. This is done via the Mjoelner serial interface.

Example Signal Measured at VCXO output (R425)

Figure 45: VCXO 26 MHz waveform



VCO

The VCO is an ASIC with all the frequency determining parts inside.

In order to reduce the requirements of the tuning voltage and coverage of the VCO, the VCO core is composed of four VCOs in parallel. This VCO circuit enables a very wide tuning range of 3.4 - 4.0 GHz .

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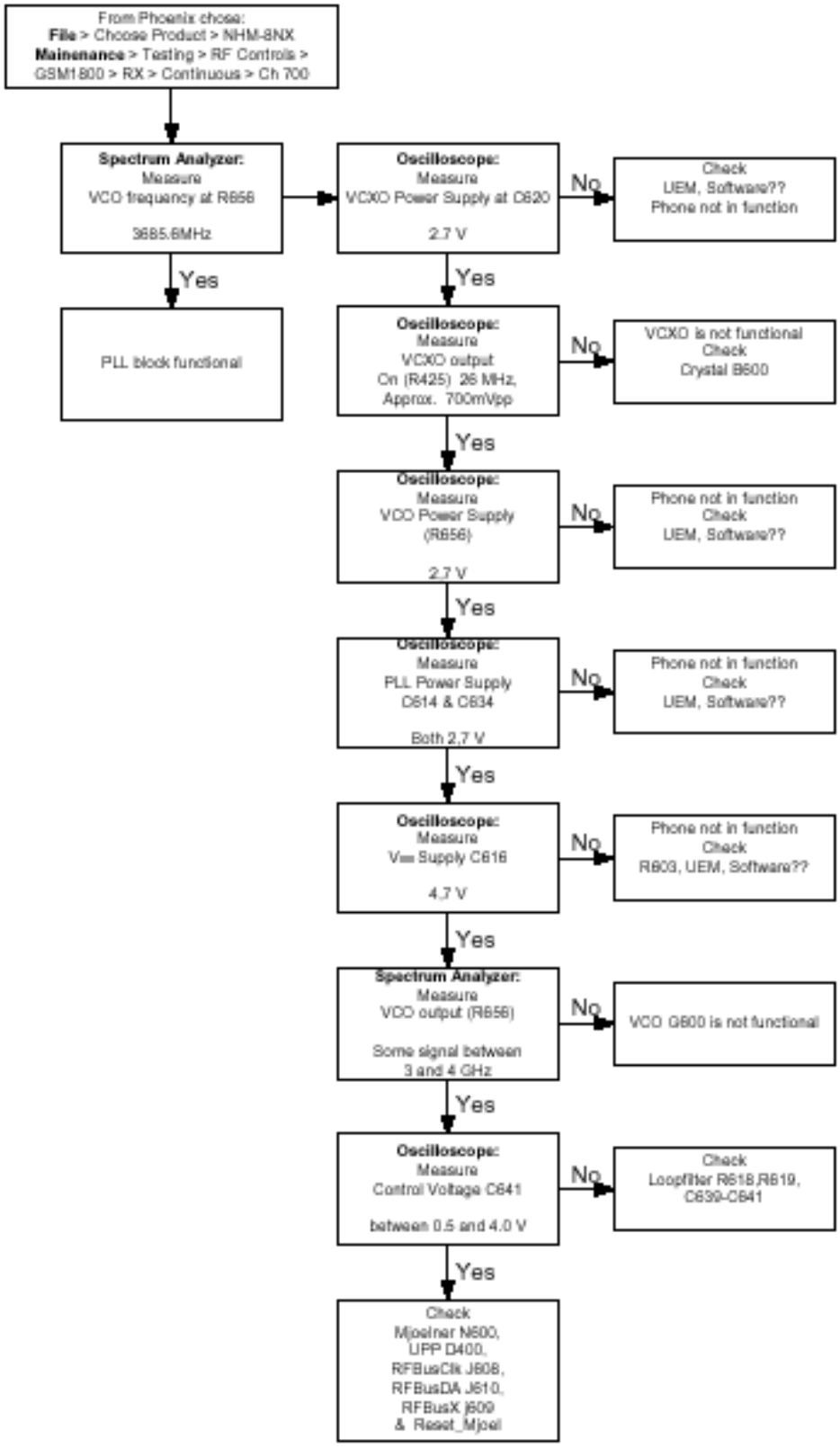
Troubleshooting diagram for PLL Synthesizer

Figure 46: PLL Troubleshooting diagram


From Phoenix chose:
File > Choose Product > NHM-8NX
Mainenance > Testing > RF Controls > GSM1800 > RX > Continuous > Ch 700
Spectrum Analyzer: Measure VCO frequency at R656
3685.6MHz
Yes
PLL block functional
Oscilloscope: Measure VCXO Power Supply at C620
2.7 V
No
Check UEM, Software?? Phone not in function
Yes
Oscilloscope: Measure VCXO output On (R425) 26 MHz, Approx. 700mVpp
No
VCXO is not functional Check Crystal B600
Yes
Oscilloscope: Measure VCO Power Supply (R656)
2.7 V
No
Phone not in function Check UEM, Software??
Yes
Oscilloscope: Measure PLL Power Supply C614 & C634
Both 2.7 V
No
Phone not in function Check UEM, Software??
Yes
Oscilloscope: Measure Vbb Supply C616
4.7 V
No
Phone not in function Check R803, UEM, Software??
Yes
Spectrum Analyzer: Measure VCO output (R656)
Some signal between 3 and 4 GHz
No
VCO G800 is not functional
Yes
Oscilloscope: Measure Control Voltage C641
between 0.5 and 4.0 V
No
Check Loopfilter R618,R619, C639-C641
Yes
Check Mjoelner N600, UPP D400, RFBusClk J608, RFBusDA J610, RFBusX J609 & Reset_Mjoel

Phone fails after power on

If the phone stops working a short time after the power is turned ON, a possible reason for this could be that the 26MHz system clock signal is not getting to the UPP clock-input in BaseBand. In this case check the following:

1 Turn on the phone and check

2 VCXO Power supply (C620) = 2.7V

3 VCXO output (R425 – end **not** connected to C425) is 26MHz and approx. 700mVpp

If this is not the case check the reference crystal (B600) and Mjolner (N600) as well as R425, R426, C425, C426.

Measurement points at the VCXO

Figure 22: Measurement point for VCXO supply

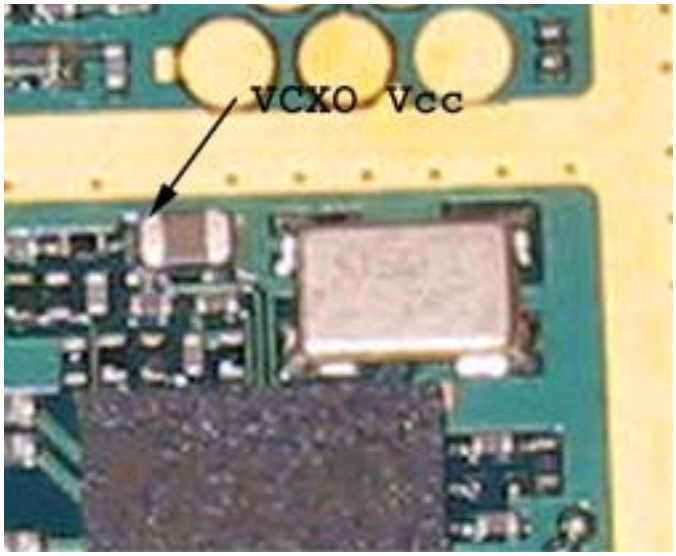
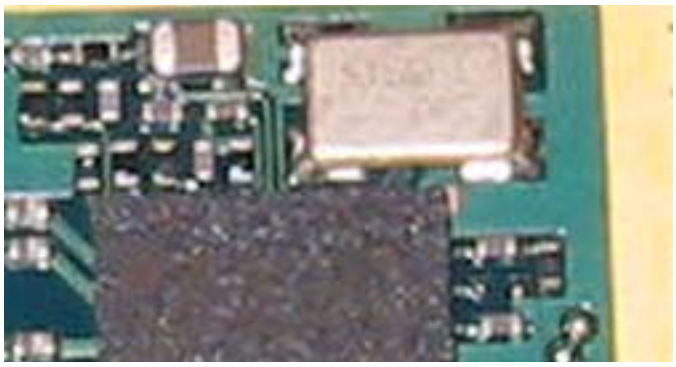


Figure 23: Measurement point for VCXO output



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Measurement points at the PLL/VCO

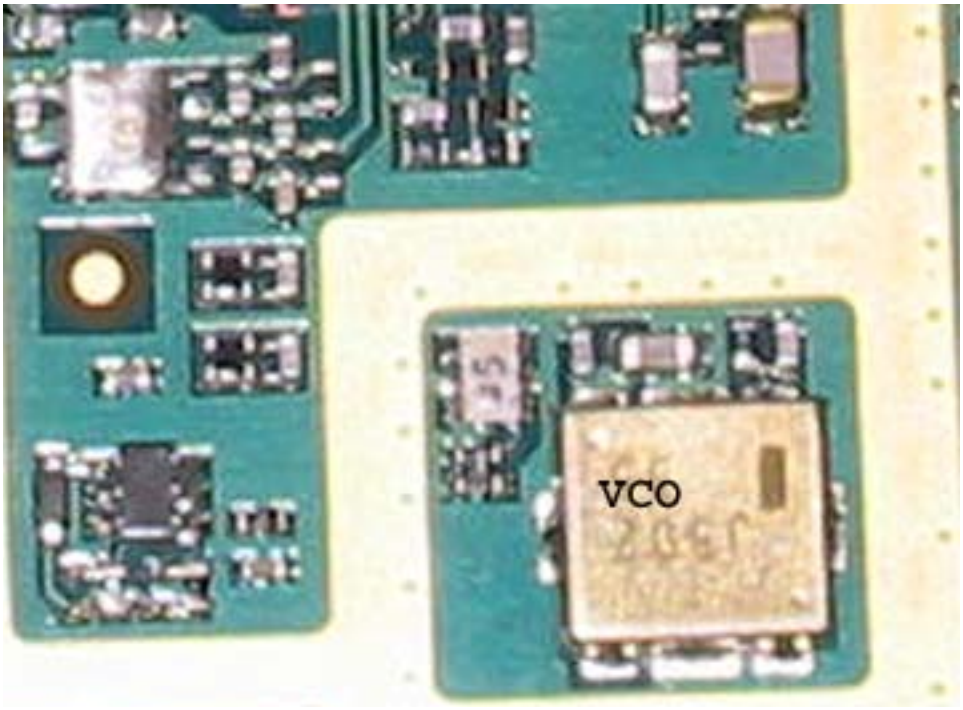

Figure 47: Measurement point for PLL

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RH-18/38 Manual Alignment using Phoenix

In Phoenix select connection Fbus and Product Gemini. If you power up the board before selecting Fbus, it works without any error messages.

Use Jig or other device for RF and bus connection. Attenuation in the probe alone is 0.5dB for 900 and 1dB for 1800. Use CMD55 or other suitable device. Default channels are 37 for GSM900 and 700 for GSM1800. The alignments and calibrations must be performed in the order shown to give reliable results.

The way to save data to the phone and to load data from the phone is made different in the various tunings. Always look what is shown in the windows regarding these issues and act accordingly.

To vary a selected parameter you can use + and – key or in some cases directly type the new value. + and – steps the value for every press. Repeat function seems not to work. In I/Q you can use the side arrows.

RX calibration

Select **Maintenance**, Tuning, RX Calibration

Select **Band:** GSM 900

Select Automatic and follow the promts

The result should be like the shown:

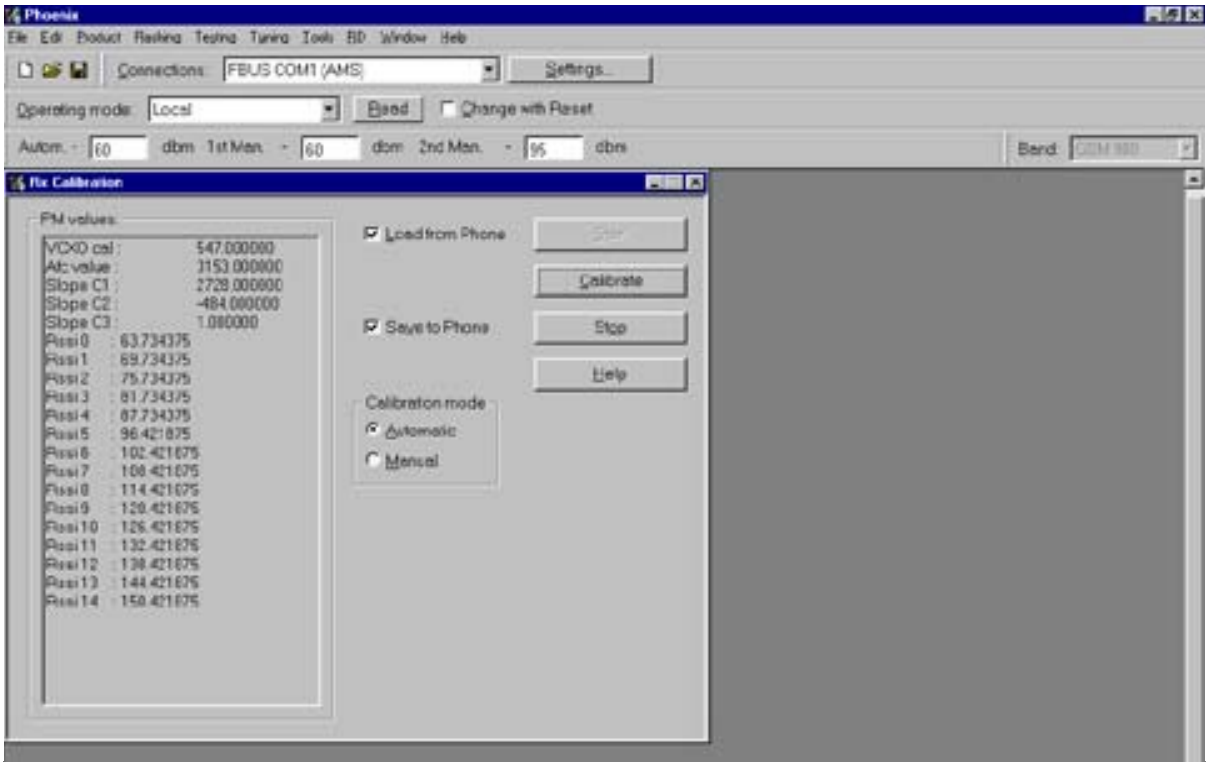

Figure 48: RX calibration window

GSM1800 RX calibration

1 The existing data in the phone is shown

2 Calibrate, and the new data is shown

3 Stop, and the little window pops up where you can select to save or not

4 Select GSM1800 in the top bar and repeat at channel 700

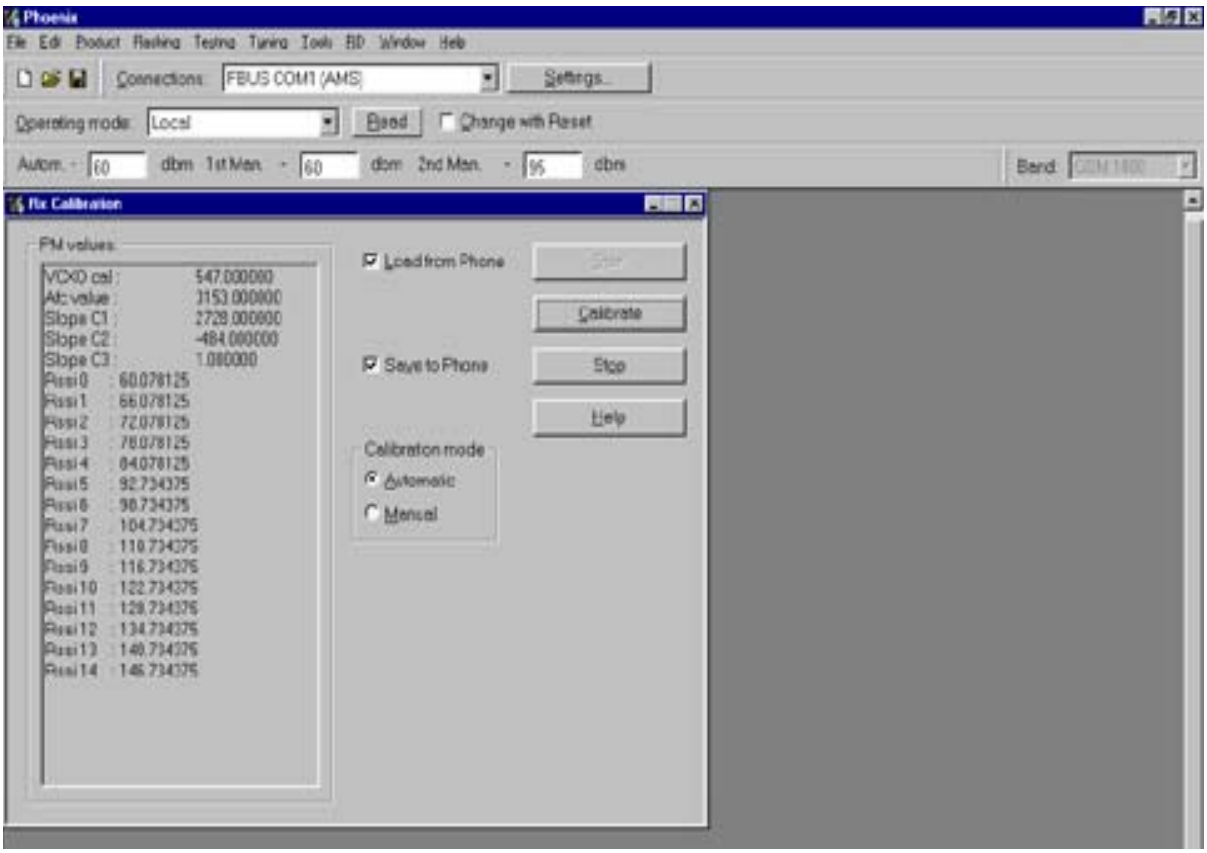

Figure 49: GSM1800 RX calibration window

1 The existing data in the phone is shown

2 Calibrate, and the new data is shown

3 Stop, and the little window pops up where you can select to save or not

RX channel select filter

1 Select Maintenance, Tuning, Rx Channel Select Filter Calibration

2 Press Start and you can select to load values from the phone or not

3 Press AutoTune

4 Press Stop and you can select to save values to the phone or not to..

Figure 50: RX channel selection window

Note: This calibration requires no input signal

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RX Band Filter Response

1 Select Maintenance, Tuning, Rx Band Filter Response Compensation

2 Press Start, Read from PM area and you can select to load values from the phone or not

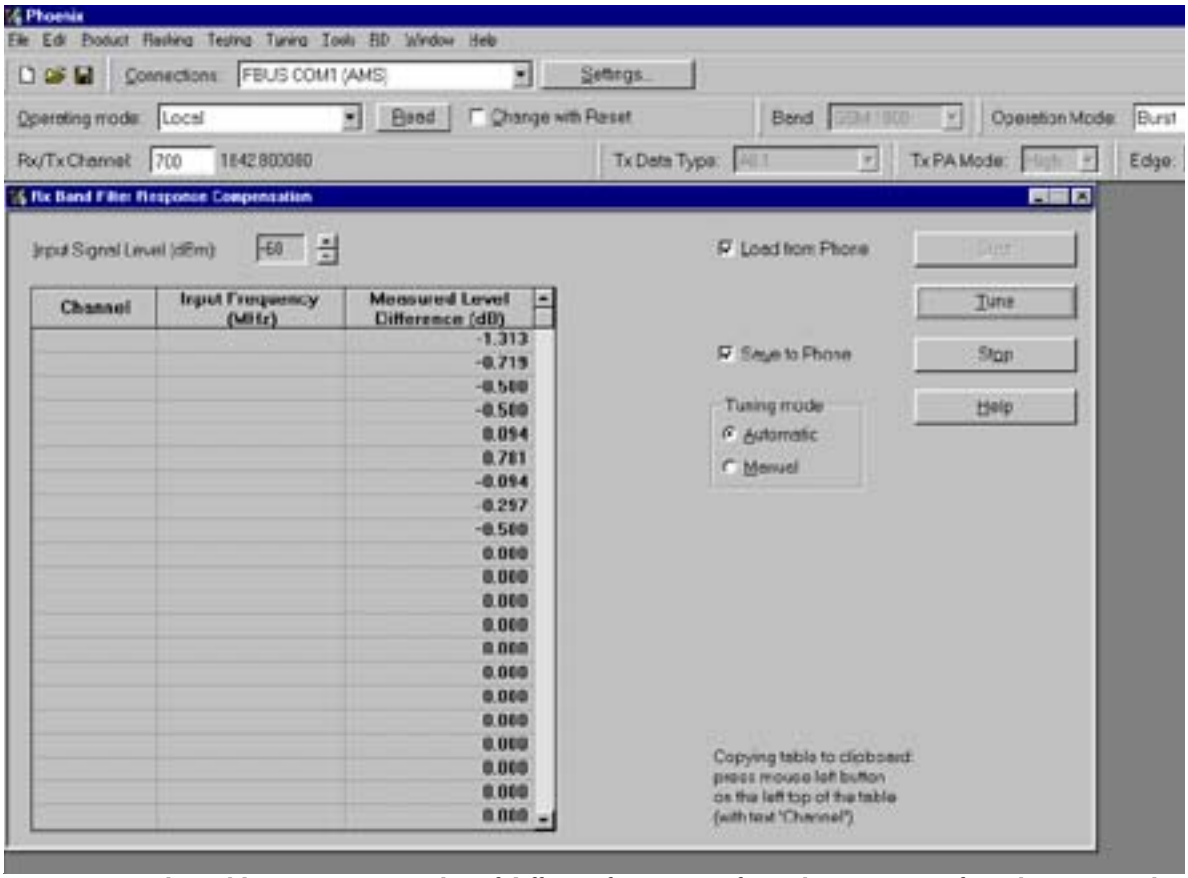
3 Press Manual Tuning

4 Set the Signal generator according to the pop-up windows

5 When finished press Stop, Write to PM area and you can select to save values to the phone or not

6 Repeat for GSM1800

Figure 51: RX Band filter response window



Note: This calibration requires a lot of different frequencies from the generator. If you have a signal generator with a frequency list option you can with advantage use Auto Tuning (Dwell should be around 10ms).

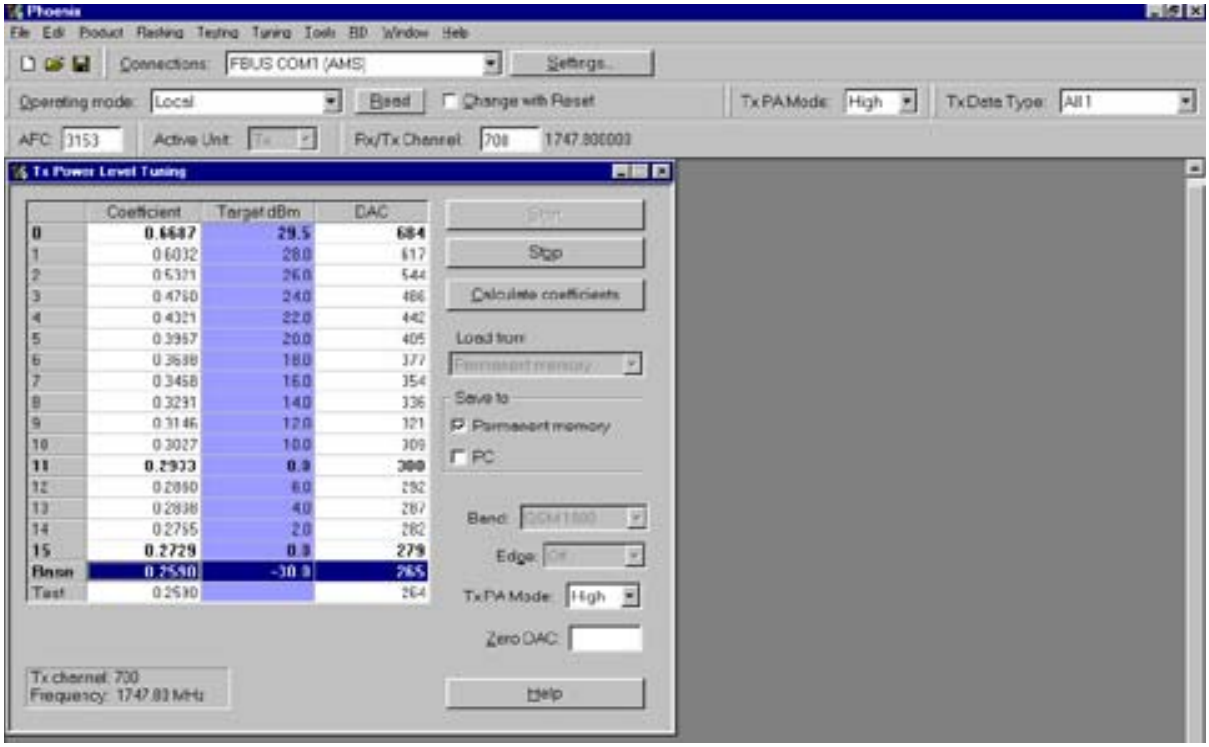
Tx Power tuning

Select Maintenance, Tuning, Tx Power Level Tuning

TX power tuning GSM

1 Select edge off, GSM 900

Figure 52: TX power tuning window1



2 Press Start and select from where to load values. It is best to have PC saved data from a good phone. The data from a "good" phone can be saved to PC for use later.

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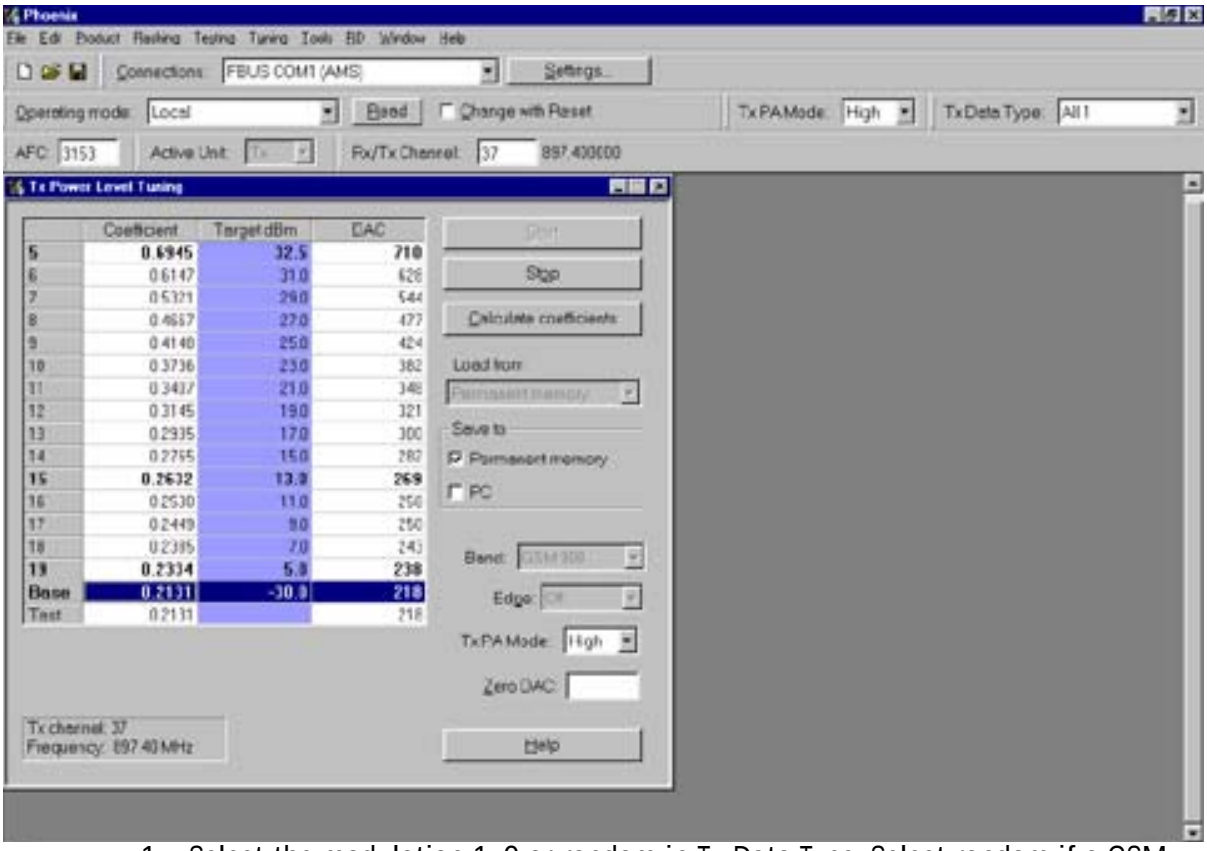
Figure 53: TX power levwel tuning window 2



1 Select the modulation 1, 0 or random in Tx Data Type. Select random if a GSM tester is used. Then it can synchronise to the burst.

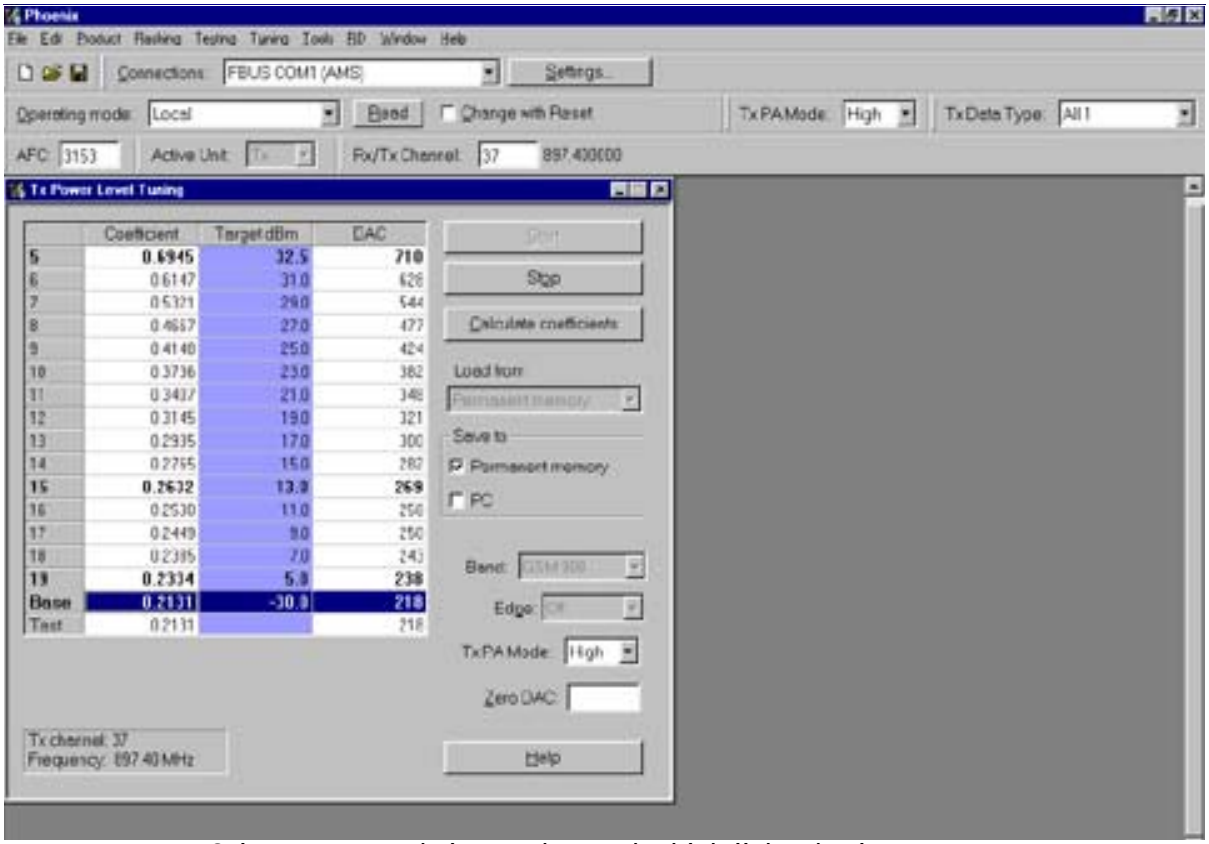
2 Select Tx PA Mode High

3 Tune the highlighted values to the wanted power (Use average burst power)

4 Tune base level to –28dBm (Close to lowest level CMD55 can keep synchronisation)

5 Calculate coefficients

Figure 54: TX power level tuning 3

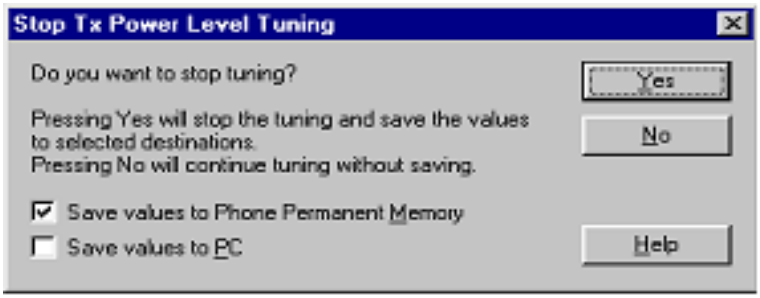


1 Select Tx PA Mode low and tune the high lighted values.

2 The base level coefficient is taken from the high mode. Do not change it.

3 Calculate and select Stop

Figure 55: Stop TX power level tuning dialogue


Stop Tx Power Level Tuning
Do you want to stop tuning?
Yes
Pressing Yes will stop the tuning and save the values to selected destinations.
Pressing No will continue tuning without saving.
No
Save values to Phone Permanent Memory
Save values to PC
Help

If you are satisfied with the coefficients and the power, then save to the Permanent memory.

You can also save the table to the PC, so that you can load it to an other phone. Or you can select not to do anything by removing both ticks.

Only way to end the tuning session is with Yes

TX power tuning PCN

Figure 56: PCN (GSM1800) TX power tuning window

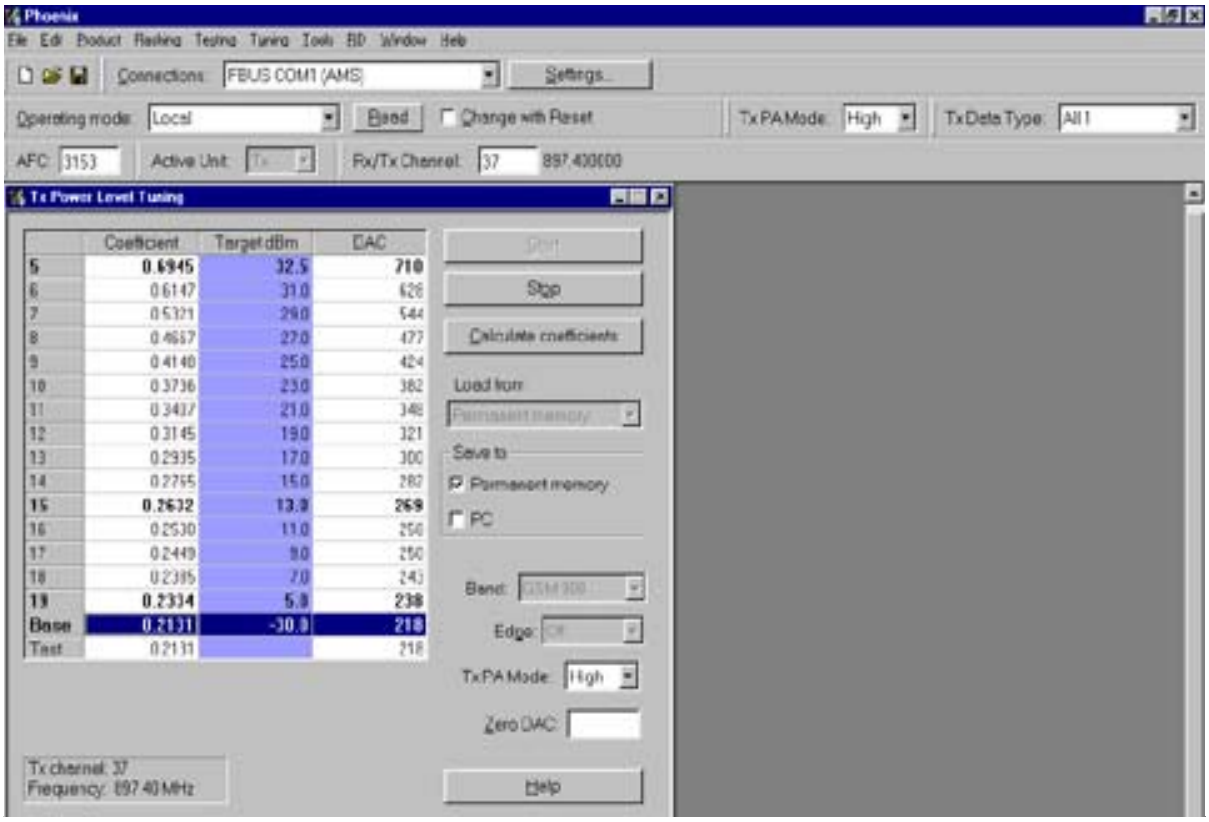
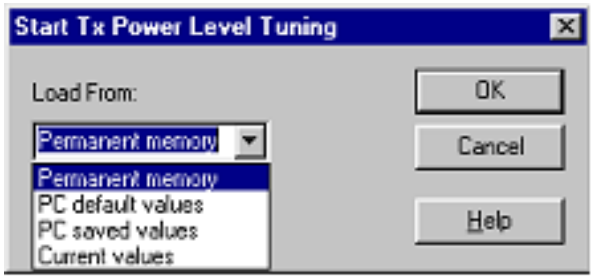


Figure 57: Start TX power level tuning dialogue



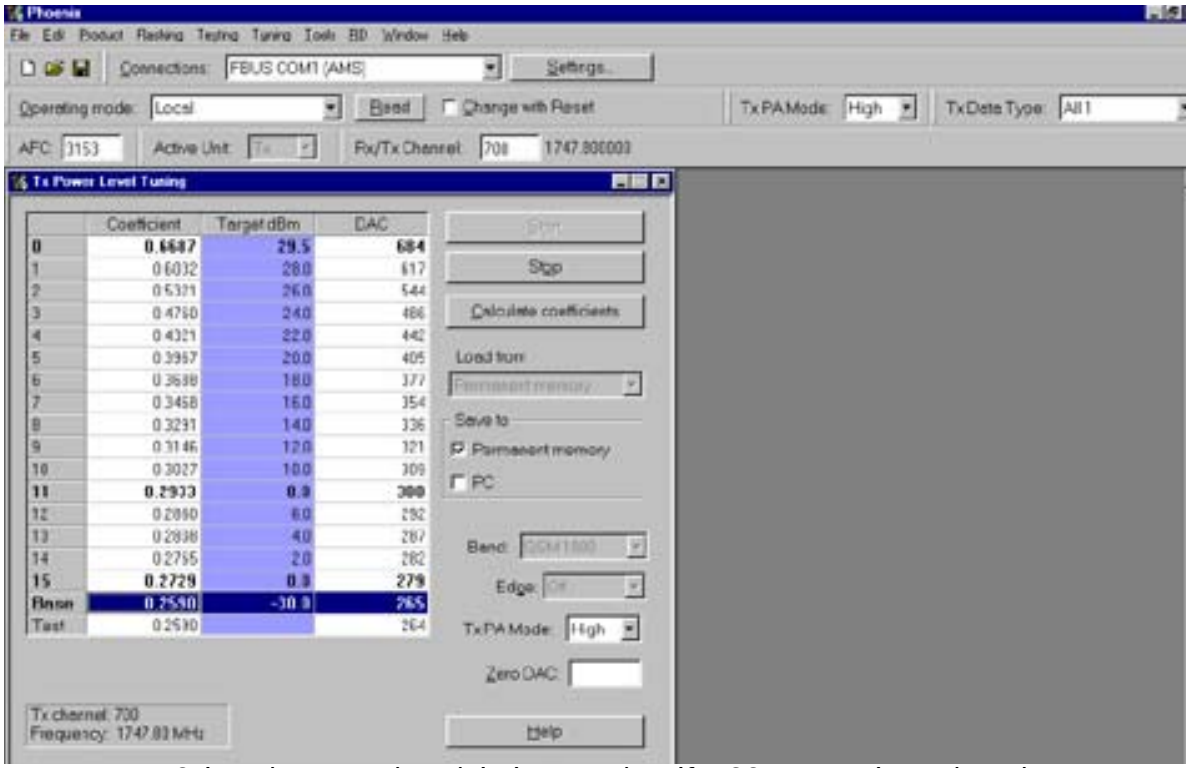
1 Select GSM 1800 band (PCN)

2 Start

3 Select where to get values from. Normally Permanent Memory

4 OK

Figure 58: GSM1800 TX power level tuning window



1 Select the wanted modulation. Random if a GSM tester is used, so that you can synchronise the burst.

2 Only high mode is possible

3 Tune the highlighted values to the wanted power

4 Tune base level to –27dBm

5 Stop

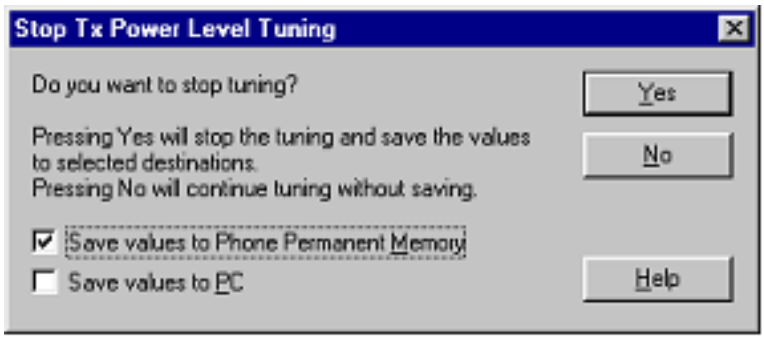

Stop Tx Power Level Tuning
Do you want to stop tuning?
Yes
Pressing Yes will stop the tuning and save the values to selected destinations.
Pressing No will continue tuning without saving.
No
Save values to Phone Permanent Memory
Save values to PC
Help

Figure 59: Stop TX power level tuning dialogue

6 Select where to save the values, one, both or no one can be selected.

7 Yes. That's the only way to end tuning.

I/Q tuning

Select Maintenance, Tuning, Tx IQ tuning

Set CMD55 to Narrow Spectrum on the same band as the phone. Selected in the top menu.

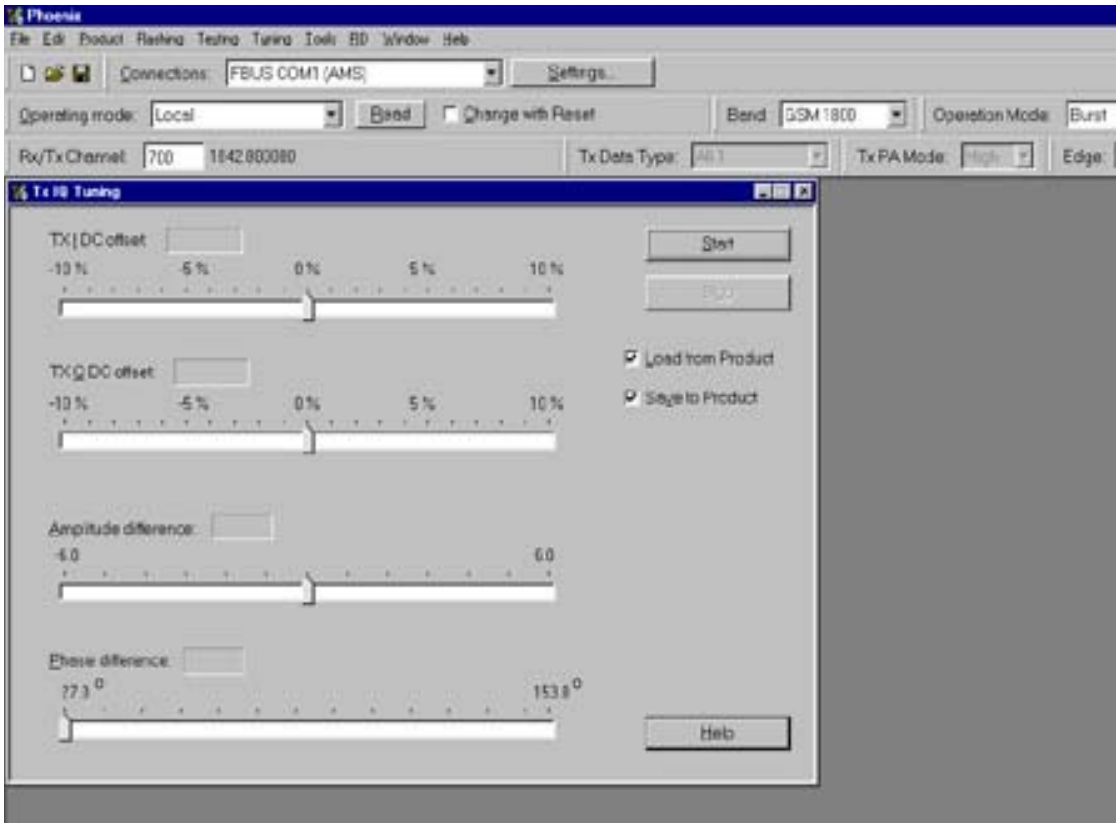


Figure 60: I/Q tuning window

1 Select where to get values. Normally select Load From Product

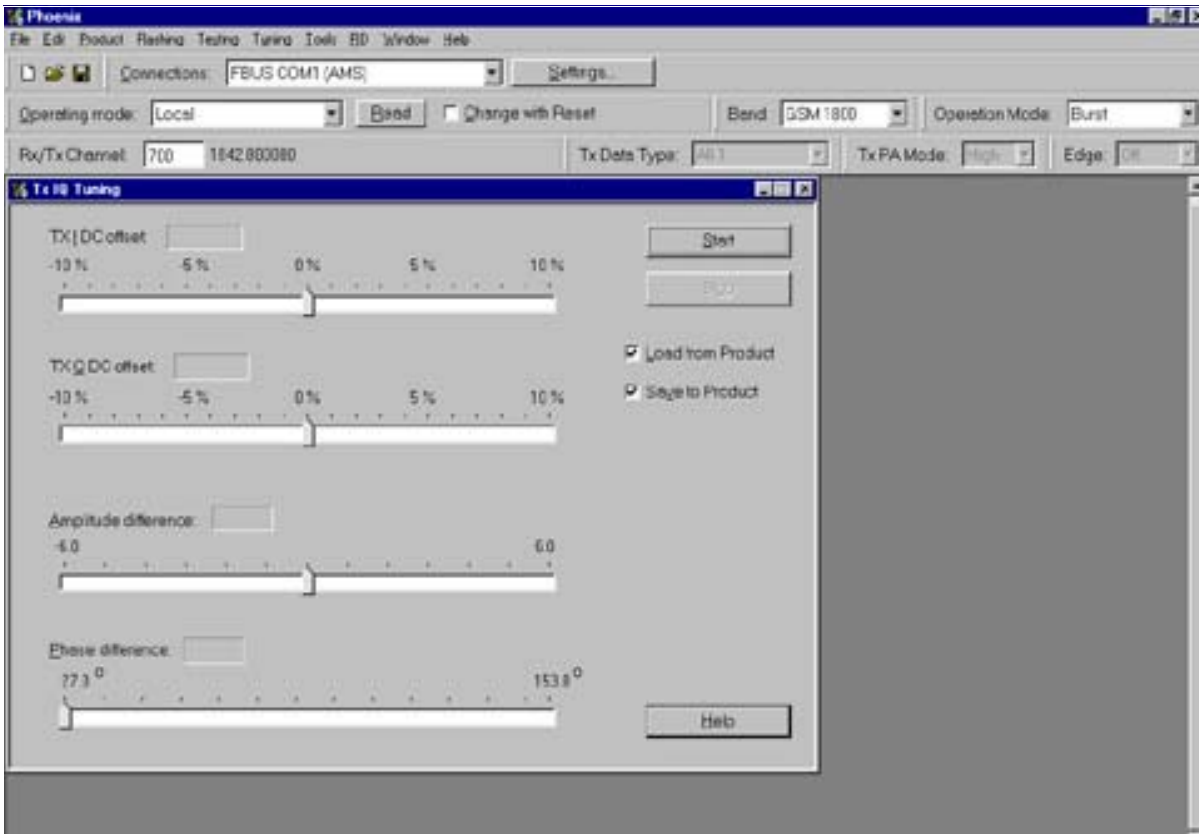
2 Start

3 Tune offset values to lowest carrier. Use Side arrows or +, - .

4 Tune Amplitude and phase to lowest sideband.

5 Check eventually with other modulation (0).

Figure 61: TX I/O tuning window



Note: Remember to tick Save to Product if you want to save the values in the phone.

1. Stop to end the tuning with the selected save option
2. Same procedure for PCN as for GSM.
3. Remember to tick Save To Product.
4. Stop. Ends tuning and does what you have ticked.

RF control

This menu can be placed in maintenance or in tuning depending on the Phoenix.

It is meant to check the receiver or transmitter without going in call. It works very much like a call, but you have control via the PC, and not via the tester.

The TX mode GSM900 can select between Free, High and low mode. It changes the PA mode, but changes also the power level if a level is selected that is not supported in that mode.

If you want to tune at other channels than the default, then you must select it first in RF control and then start the tuning.

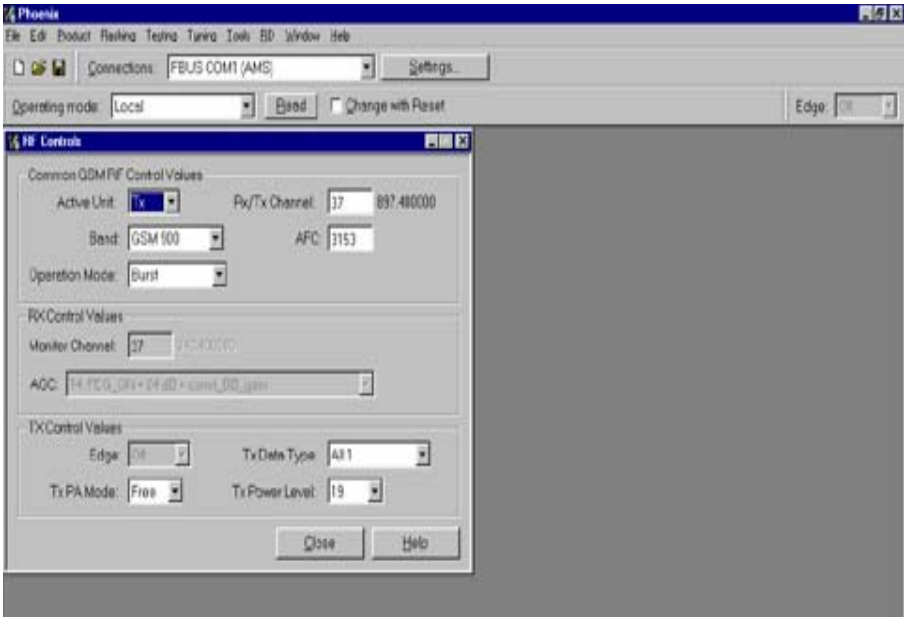


Figure 62: RF control window

Call testing

If all tunings are done, and the phone TX and RX is working a call is the ultimate test of the phone.

Set CMD55, or similar tester, to manual test and switch the phone to normal if it was in local. Remember to have a test simcard in the phone.

When the phone has made a registration a call can be made, and it is possible to let the phone answer via Phoenix. In the Autocaller (Maintenance Testing) you can answer by ticking Answer when button pushed and then posh the button.

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